

DOCUMENT RESUME

ED 147 327

95

TM 006 601

TITLE Evaluation of the National Diffusion Network. Final Report. Volume I: Findings and Recommendations.

INSTITUTION Stanford Research Inst., Menlo Park, Calif.

SPONS AGENCY Office of Education (DHEW), Washington, D.C.

REPORT NO SRI-P-4385

PUB DATE May 77

CONTRACT 300-75-0260

NOTE 221p.; For related documents, see TM 006 651 and 806

EDRS PRICE MF-\$0.83 HC-\$11.37 Plus Postage.

DESCRIPTORS Adoption (Ideas); Change Agents; *Change Strategies; *Diffusion; *Educational Innovation; Elementary Secondary Education; Evaluation Methods; *Information Dissemination; Interagency Coordination; *National Programs; Program Development; *Program Evaluation; Regional Laboratories; School Districts; State Departments of Education; Success Factors

IDENTIFIERS *National Diffusion Network

ABSTRACT

Major findings, interpretations, and policy recommendations developed from a national, in-depth evaluation of the National Diffusion Network (NDN) are presented. Features of the NDN approach to the dissemination of educational innovation include: local change as a goal, use of specialized change agents, emphasis on interpersonal tactics to effect change, and the change agent's orientation for the user of the innovation. Primary goals of this evaluation were (1) to provide a comprehensive description of the evolution, organization, objectives and operating procedures of the NDN, (2) to describe the NDN processes and explain their influence on the adoption of ideas, (3) to evaluate the organizational effectiveness of the NDN and its supporting components, and (4) to analyze evaluation findings and make specific recommendations regarding the continuation of the NDN. These recommendations included awarding specialized technical assistance contracts for operating the NDN, and funding and administering the NDN on as high a level as possible within the Education Division. Among the issues cited for further study were: the role of instructional materials versus in-person assistance in effecting and sustaining change, the patterns and effects of secondary diffusion, the impact of NDN adoptions in terms of conventional educational outcomes, NDN interface with state education agencies, and the problems in effecting changes in urban schools. (MV)

ED147327

Final Report

SCOPE OF INTEREST NOTICE

The ERIC Facility has assigned this document for processing to:

TM ER

In our judgement, this document is also of interest to the clearinghouses noted to the right. Indexing should reflect their special points of view.

May 1977

**EVALUATION OF THE NATIONAL
DIFFUSION NETWORK**

Volume I: Findings and Recommendations

Prepared for:

U.S. OFFICE OF EDUCATION
DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
WASHINGTON, D.C. 20202

Contract 300750260

SRI Project 4385

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

John A. Emrick
Stanford Res. Inst.

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."



STANFORD RESEARCH INSTITUTE
Menlo Park, California 94025 • U.S.A.

PREFACE

In line with its continuing interest in encouraging the spread of exemplary educational programs and practices to schools across the nation, the U.S. Office of Education established the National Diffusion Network (NDN) in 1974. The NDN is designed to bring together representatives of federal, state and local agencies in order to promote the exchange of materials and practices validated by the Joint Dissemination Review Panel and the adoption of these materials and practices by interested local education agencies.

In July 1975, OE's Office of Planning, Budgeting, and Evaluation contracted with SRI to undertake an evaluation of the NDN organization, process and outcomes during the 1975-76 school year for the purpose of better understanding the relative effectiveness of this approach to diffusion of exemplary programs. The final report on SRI's evaluation of the NDN has been prepared in two volumes. In Volume One of this report we present the major findings of our evaluation and the implications of these findings for future federal dissemination and diffusion activities. In Volume Two, prepared as a companion to this document, we describe the technical details of the evaluation methodology and analysis procedures employed and present statistical data obtained from the evaluation surveys of NDN participants.

ACKNOWLEDGEMENTS

The task of evaluating such a complex and dynamic enterprise as USOE's National Diffusion Network has been both challenging and satisfying. It is clear to us that many of the elements which account for the success of the NDN--a sense of purpose, dedication and pride in accomplishment--were equally fundamental to the success of our evaluation. We owe a debt of gratitude to the open and enthusiastic cooperation given us by NDN participants at federal, state and local levels. In particular, special thanks are extended to Lee E. Wickline and Jean Narayanan of USOE, the principal architects of the NDN, through whose generous assistance and support many vexing problems confronting this evaluation were overcome. Thanks are also extended to the members of their staff, the ESEA Title III program officers, who provided invaluable assistance and support in coordinating our evaluation activities with those of the NDN.

We wish to acknowledge the cooperation of the Chief State School Officers in supporting our study and particularly of Dr. Howard Berkum, who served as liaison with the Council of Chief State School Officers and the Committee on Evaluation and Information Systems, and who provided thoughtful and valuable reviews of evaluation procedures and reports (including this one).

Deepfelt appreciation and gratitude are due to all of the NDN Developers and Facilitators who cooperated in this study and who have made major contributions to an improved understanding of the diffusion process. Although we accept full responsibility for any errors or shortcomings in such understanding as reflected in this report, we are most grateful for the special assistance, guidance and helpful review comments made by our NDN consultants, Dr. David Crandall of the Massachusetts Diffusion Assistance Project, Dr. Frank Thompson of the ECOS Training Institute, and Ralph Parish of Project LINK. We also wish to thank the numerous intermediate and local administrators, central staff, and

teachers who gave up their valuable time to discuss NDN issues with our staff and to complete our lengthy survey forms, and without whose assistance this evaluation could hardly have been accomplished.

Much of the merit of this evaluation and its findings must be credited to our distinguished project consultants: Dr. Richard O. Carlson of the University of Oregon; Dr. Michael Kirst of Stanford University; Dr. Arlene Magnus of the Instructional and Professional Development Department, California Teachers Association; Dr. Everett Rogers of Stanford University; and Dr. William Wolf of the University of Massachusetts. We are especially grateful to these consultants for their assistance in shaping the study issues, in responding to our interpretations of findings, and in their critique of earlier drafts of this report. Again, we accept full responsibility for any weaknesses in the study or in this report.

Special recognition is due to the professional and technical project staff of SRI who carried out all phases of this study in a professional and highly competent manner,

Dr. Douglas Hall	Ms. Susan Alford
Dr. Harry Kincaid	Ms. Pam Clark
Dr. Charles Norwood	Mr. Jay Cross
Dr. Lee Ruggels	Ms. Anne Robertson
Dr. Susan Russell	Ms. Beth Sherman
Dr. Marian Stearns	Ms. Robby Weinman,

and the support staff for their assistance in processing the evaluation surveys:

Ms. Rose Brown
Ms. Sherry Hanks
Mr. Jerry Kaufman
Mr. Billy Lambert
Ms. Elizabeth Murphy.

To Dr. John Draper, Mr. Richard Marciano, and Dr. Philip Sorensen, who assisted the project in administrative and supervisory capacities, we extend our thanks. And to our team of project secretaries and clerical assistants--Sheila Berry, Nancy Craig, and Brigitte Visor--we are exceptionally grateful.

Finally, and most importantly, we thank Dr. Ann Bezdek of OPBE for her patience, foresight and support as USOE project officer for this evaluation.

CONTENTS

LIST OF ILLUSTRATIONS	ix
LIST OF TABLES	xi
Chapter 1 OVERVIEW OF EVALUATION GOALS AND METHODOLOGY	1
The NDN Approach	1
Evaluation Perspective	3
Goals and Procedures of the Evaluation	5
Summary of Goals and Methods	13
Report Organization	16
Chapter 2 THE EMERGENCE OF THE NATIONAL DIFFUSION NETWORK . . .	19
Creation of the National Diffusion Network	19
Elements of the NDN	21
Historical Roots of the NDN	36
Theoretical Foundations	40
Summary	47
Chapter 3 THE INITIATION STAGE OF THE NDN DIFFUSION PROCESS . .	51
Evidence of NDN Effectiveness	51
Initial Awareness Activities	54
Secondary Awareness Activities	62
Training Activities	77
Summary of the Initiation Stage	94
Chapter 4 THE IMPLEMENTATION STAGE OF THE NDN DIFFUSION PROCESS	99
Patterns of Adoptions	100
Characteristics of Successful Implementations	113
NDN Influences on the Adoption Process	120
Summary of the Implementation Stage	132
Chapter 5 ORGANIZATIONAL ANALYSIS OF THE NDN	137
The Staffing and Organization of NDN Change Agents	138
NDN Infrastructure	147
OE Management and Leadership	153
The Educational Diffusion Project	156
Summary	163

Chapter 6 ANALYSIS OF KEY POLICY ISSUES AND RECOMMENDATIONS	
FOR NDN CONTINUATION	167
Background of Federal Responsibilities for Dissemination .	167
Key Policy Issues	167
Continued Federal Support of the NDN	168
State Participation and Support	171
Incentives for Increased State Participation	173
Developer Funding Polciy	175
Facilitator Funding Policy	181
Coordination with Other Federal Education Dissemination	
Programs	182
Administration of the NDN	186
Recommended Further Studies	191
APPENDIX	A-1
References	R-1

LIST OF ILLUSTRATIONS

1	Overall Schematic of the National Diffusion Network	22
2	Locations of NDN Facilitator Projects included in this Evaluation	31
3	Approximate Geographic Distribution of NDN Adoptions Occurring during 1974-75	103
4	Approximate Geographic Distribution of NDN Adoptions Occurring during 1975-76	105
5	Approximate Geographic Distribution of NDN Adoptions Occurring during 1974-76	107
A-1	Diffusion Pattern for New Model Me (a Funded Cohort I Developer)	A-3
A-2	NDN Adoption Patterns within a Selected Facilitator Region (the State of Illinois)	A-4
A-3	Diffusion Pattern of Cohort I Developers whose Projects Stressed Organizational Arrangements/Training/ Administration with Cohort I Facilitators	A-5

LIST OF TABLES

1	Summary of Major Categories of NDN Diffusion Activities . .	4
2	NDN Evaluation Variables	8
3	Summary of Evaluation Methods	14
4	Projects Funded as NDN Developer/Demonstrators (1975-76) .	24
5	An Extension of the Classical Diffusion Model to Education Applications	45
6	Typical Initial Awareness Materials in NDN Outreach Campaigns as Reported by Facilitators	56
7	Frequency (percents) of Types of Information and Methods of Contact Provided in Facilitator Awareness Campaigns . .	60
8	Secondary Awareness Components that Significantly Influence Adoption Outcome and Process Indicators	75
9	Pre-Start-Up Training Content	84
10	Pre-Start-Up Training Methods	85
11	Training Components that Significantly Influence Adoption Outcome and Process Indicators	90
12	Characteristics of Primary Contact which Significantly Influence Adoption Outcomes	115
13	Adopter Context Characteristics which Significantly Influence Adoption Outcomes	117
14	Typical Staff Composition of NDN Facilitator and Developer Projects	139
15	Developer and Facilitator Staff Characteristics which Significantly Influence Adoption Outcomes	142
16	Percentage of all Possible Developer-Facilitator Linkages for Training Activities during 1976-76 School Year	146
17	NDN Participant Opinions of ED Services and Assistance . .	161

CHAPTER 1

OVERVIEW OF EVALUATION GOALS AND METHODOLOGY

In line with its continuing interest in identifying successful educational practices and encouraging the spread of these practices to schools across the nation, the U.S. Office of Education (OE) has established a National Diffusion Network (NDN). Created in 1974 under Title III, Section 306 of the Elementary and Secondary Education Act (ESEA), the NDN is designed to bring together representatives of federal, state, and local agencies in order to promote the exchange of successful ideas, materials, and programs within and across state lines. Through the NDN, programs that have been identified as successful and validated by the OE/NIE Joint Dissemination Review Panel (JDRP) are made available to Local Education Agencies (LEAs) interested in installing these programs in their schools.

The NDN Approach

As will be shown in this evaluation, the NDN approach differs in several substantial ways from more conventional approaches to educational dissemination and change. First, the goal or mission of the NDN is to effect widespread adoptions of innovations validated by the JDRP, as opposed to simply disseminating information regarding these programs. A school system--either public or nonpublic--showing interest in an NDN innovation is a potential adopter, whereas a school system implementing (putting into practice) an NDN program is an actual adopter. One important feature in the NDN approach is that contact with school systems is maintained as they progress from potential to actual adopter status.

Second, the NDN uses two categories of change agents in accomplishing its mission. The first category--Developer--refers to the change agent

who is associated with the development, demonstration, and general implementation assistance in regard to an innovation approved by the JDRP for dissemination. A given Developer in the NDN may be a single individual or a staff of several individuals. The defining characteristic is that Developers are associated with specific innovations. Facilitator, in contrast, is the term applied to the change agent who is associated with a specific region, often an entire state. Facilitators provide the link between Developers (with their innovations) and local schools, which are the targets of the system. Facilitators, however, do not function as program or technical experts but, rather, as process specialists. They act to surface potential adopters, to establish organizational interface between Developers and potential adopters, and to facilitate the adoption process. Facilitators, then, represent a new feature--one that is not included in conventional diffusion systems.

A third feature of the NDN is the use of person-intensive change tactics. Whereas most dissemination systems rely on information technology to respond to user needs (e.g., ERIC), the NDN approach places greater emphasis on interpersonal tactics. Indeed, it is our central thesis that interpersonal or person-intensive components of the NDN constitute its most distinctive feature in terms of its overall effectiveness in producing directed change.

Another less pervasive property of the NDN is its current emphasis on practitioner-developed, yet externally validated, innovations. NDN innovations typically do not emerge from R&D systems (although they may), and nearly always the Developer change agent is the innovator or project originator. The important point is that the NDN innovations tend to be developed by and for practitioners, with the added feature of JDRP as a quality control mechanism.

These four distinguishing features--local change as a goal, use of specialized change agents, emphasis on interpersonal tactics to effect change, and practitioner orientation of innovation providers--constitute an overview of the NDN approach (as distinct from other dissemination

systems). An overview of the NDN diffusion process, or the sequence of diffusion activities characterizing the approach, is provided in Table 1.

As Table 1 shows, the diffusion process includes three general stages: initiation, implementation, and assimilation. These three stages are well known in the literature of educational diffusion and organizational change; they have been described by Gross et al (1971), Giaquinta (1973), and Berman and McLaughlin (1975), among others. Briefly, the initiation stage includes those activities intended to inform LEAs of the innovations, to build local interest in adoption of one or more programs, and to prepare LEA personnel to undertake implementation, or actual use of the innovation in their schools and classrooms. The third stage, assimilation, is the process by which the innovation loses its "special project" status and becomes a regular part of the school's organization or curriculum.* Only the first two stages, initiation and implementation, require active participation by the NDN. Hence, diffusion activities have been categorized within these two stages for purposes of the current evaluation.

Evaluation Perspective

In June 1975, the Office of Planning, Budgeting and Evaluation (OPBE) of OE contracted with Stanford Research Institute to conduct a comprehensive, nationwide, in-depth evaluation of the NDN organization, processes, and outcomes during the 1975-76 school year, for the purpose of better understanding the relative effectiveness of this approach to program dissemination. This report presents our major findings, interpretations, and policy recommendations developed from this national evaluation.

*The first two of these stages, initiation and implementation, correspond roughly to the four-level definition of dissemination recently put forth in the report to the Dissemination Policy Council (OE and NIE) by the Dissemination Analysis Group. These four levels are Spread, Exchange, Choice and Implementation (Final Report, DAG, 1977).

Table 1

SUMMARY OF MAJOR CATEGORIES OF NDN DIFFUSION ACTIVITIES

Diffusion Stage/Category of Activities	Nature of Activities
INITIATION	
● Initial Awareness Activities	Facilitator agents use outreach mailings and follow-up contacts to surface potential adopters. Materials mostly limited to brief brochures. Different versions of materials usually sent to different targets (superintendents, principals, teachers, etc).
● Secondary Awareness Activities	Developers coordinate with Facilitators to provide indepth information to potential adopters. Regional and specialized conferencing, education fairs, and demonstrations. Materials more detailed. Visits to Developer site often involved (underwritten by Facilitators).
● Pre-implementation Training	Developers conduct indepth workshops (3-5 days) to prepare key adopter staff to implement. Training often conducted in adopter context. Often adoption agreement required. Training focuses on conceptual basis of innovation. Extensive materials.
IMPLEMENTATION	
● Post-implementation Training	Occasionally in-service training provided to adopters by Developer staff. Assistance in adapting to local setting.
● Follow-up Assistance	Moral support, evaluation assistance, and assessment of implementation conducted by Facilitators and/or Developers.
ASSIMILATION	
● Not part of NDN strategy	Local effects of adoption accrue.

Briefly, the evaluation focuses on several major categories of issues, ranging from examination of the organizational structure and operational effectiveness of the NDN as a "national system" to documentation and characterization of the diffusion process and adoption consequences. The evaluation has been conducted for both summative (i.e., Does the NDN approach seem to work? If it does, why and how well and for what purposes?) and formative purposes (i.e., What program, process, and adopter characteristics and activities are associated with, or appear to yield, more successful outcomes? How might the approaches be improved?).

Goals and Procedures of the Evaluation

The primary goals and procedures of this evaluation of the NDN are described below. The procedures are also summarized in Table 3.

Goal 1: To provide a comprehensive description of the evolution, organization, objectives, and operating procedures of the NDN

To accomplish this goal, it was necessary to review the history of the emergence of the NDN and to consider relevant research and practical experiences that led to the formulation of its objectives, procedures, and organizational conventions. This involved extensive file and literature reviews, participant interviews, and observation/documentation of network activities. Evaluation findings developed under this goal are presented in Chapter 2 of this report and address the following issues:

- the emergence of the NDN
- the salient organizational features of the NDN
- differentiation of roles and functions among NDN change agents
- descriptions of the innovations being diffused
- principles of change underlying the NDN approach.

Since this evaluation goal is basically descriptive, a case study approach was used to develop findings.

Goal 2: To describe the NDN processes and provide insight into how these influence adoptions

This goal was addressed using a combination of evaluation methods and data-gathering procedures. Baseline information was gathered by means of a questionnaire survey of 1974-75 NDN participants (including a sample of adopting school districts) in the Fall of 1975. A more comprehensive survey was administered to both new and continuing participants in the Spring of 1976. This provided for comparisons across time among continuing participants and for measuring system characteristics across all participants. Also, a multistage sample of continuing participants (16 Developers, 16 Facilitators, 34 adopters) was identified for more thorough study, involving site visits, interviews, observations, file reviews, and a more extensive LEA staff survey (including central administrators, principals, and classroom teachers). A more extensive and detailed discussion of these components of the evaluation design is presented in Volume II of this report (Emrick and Peterson, 1977).

Evidence gathered through these procedures was organized, analyzed, and interpreted in terms of three major evaluation questions, namely:

- What are the salient features of the NDN diffusion strategy and how do they affect the diffusion process and adoption outcomes?
- What are the distinctive characteristics of the innovations being diffused by the NDN and how do they influence adoption outcomes?
- What are the distinctive characteristics of actual adopters served by the NDN and how do they relate to outcomes?

The evaluation model used to address these questions combined the case study approach with process-outcome analyses. Briefly, variables were developed from major evaluation surveys and were analyzed to establish relationships of processes and events (NDN tactics, innovation properties, and LEA characteristics) to outcome patterns. These analyses were performed using multiple regression procedures. The results were interpreted with respect to how they corroborated or further elucidated descriptions of the NDN processes identified through our observation, interview, and file review procedures. Basically, then, this evaluation goal was addressed primarily by observation/case study methods, supported by regression analyses on survey findings.

Table 2 summarizes the key evaluation variables developed to examine the relationships of diffusion process, innovation, and LEA adopter characteristics to adoption outcomes. This table also summarizes the definitions of these analysis variables.

As this component of the evaluation is both complex and central, the findings are developed in considerable detail. Accordingly, we have organized our presentation and discussion of findings into two successive chapters. Chapter 3 of this report presents findings regarding the initiation stage of the NDN diffusion process. Chapter 4 presents discussion of findings regarding NDN processes at the implementation stage, including characteristics of innovations adopted and characteristics of LEA adopters, relating each to outcome variables.

Goal 3: To evaluate the organizational effectiveness of the NDN and supporting components

This evaluation goal was addressed by means of site visit observations, interviews, and file reviews, and documentation of a variety of NDN activities (national and regional conferences, demonstration and training activities, technical assistance components) occurring during the course of the evaluation. The purpose here is to describe and evaluate the overall features of the NDN as an organization or temporary system with its own set of goals, procedures, role definitions, interfaces, and supporting components. This organizational analysis identifies strengths and weaknesses of the NDN at the program level from the federal, participant (change agent), and client (LEA) perspectives.

The evaluation methods used to develop these findings include both regression of change agent characteristics (staff size, experience, operational support) on adoption outcome measures and general case study analysis based on observation, interview, document review, and survey data. Also, this organizational analysis relies heavily on Miles' (1964) discussion of temporary systems as an evaluative framework.

Findings and implications related to this goal are presented and discussed in Chapter 5. Among the issues addressed are:

Table 2

NDN EVALUATION VARIABLES

EVALUATION COMPONENT	CHARACTERISTICS	COMPONENT VARIABLES
INPUTS		
Characteristics of Innovations	Curriculum	Educational content (basic skills, environmental education, etc.)
	Pedagogy	Programmed instruction to discovery
	Philosophy	Intact classroom to open education
	Implementation level	Number of classrooms, grade levels, schools at Developer site
	Materials	Types and quantity provided
	Cost	Adoption/implementation costs
Characteristics of Change Agents	Participant background and staffing	Project staff size and experience
		Staff differentiation
		Dissemination experience
		Base support
		Territory
Characteristics of Adopting LEAs	Size	District size (number of schools) District size (enrollment)
	Urbanism/ruralism	District ruralism
	Ethnic compo- sition	Ethnic composition of district enrollment
	Centralization	Formality of rules and regulations Administration authority/leadership
	Educational climate	Staff/administration rapport
		Staff rapport
		Sense of participation (in decision processes)
		Sense of potency
	Support for innovation	District or school needs assessment
		History of community problems
		Attitude toward change (school/ district innovativeness)
		Motivation toward change
		Local support for project
		Obstacles to change

Table 2 (continued)

EVALUATION COMPONENT	CHARACTERISTICS	COMPONENT VARIABLES
	Primary contact involvement	Sense of participation (in project operations) Pre/post implementation involvement Current role in project
	Primary contact experience	Current assignment Years at school Years in district Years in profession
	Faculty/administrator involvement	How became involved in project Pre/post implementation involvement Current role in project Perceived familiarity with project
	Faculty/administrator experience	Current assignment Years at school Years in district Years in profession Current degree Work toward advanced degree
PROCESSES		
Initiation Stage		
• Initial Awareness	Outreach	Outreach (number of persons reached) Volume (number of schools and districts reached)
	Segmentation	Variation: content (stratification of materials)
	Redundancy	Variation: methods Outreach (types of persons and groups contacted)
• Secondary Awareness	Follow-up	Use of return postcards LEA awareness response
	Participant coordination	Networking (Developer/Facilitator interface)
	Conferencing	Conferencing (number and types sponsored or participated)
	Developer visits	LEA visits to DD site
	Adaptation	Variation: methods Variation: content

Table 2 (continued)

EVALUATION COMPONENT	CHARACTERISTICS	COMPONENT VARIABLES
● Pre-implementa- tion Training	Volume	Volume (number of LEAs and nonpublic schools involved)
	Targets	Targets (number and types of persons trained)
	Emphasis	Range of training content, methods, duration
	Formalization	Pre-training requirements Attendance requirements
	Adaptation	Variation in length, topics, methods
	Facilitator participation	Networking (Facilitator involvement)
	Turnkey	Turnkey (training of trainers)
Implementation Stage	Adoption agreements	Number negotiated Conditions for agreements Who establishes
	Number of adoptions	Number of adoptions (public and nonpublic)
	Scope and purpose of implementation assistance	Types of follow-up provided Post-implementation training (amount, targets)
	Frequency of assistance	Frequency of follow-up (by method) Percent of LEAs visited Interaction pattern
NDN Organization	Budget	Budget breakdown by stage DD/LEA financial assistance
	Participant interface	Materials to Facilitators Communications with Facilitators Communications with Developers Attitude toward counterpart role (Developer to Facilitator and vice versa)
	Perception of NDN	Attitude toward NDN Participation (in decision making)
	Technical assistance	Assistance from ED Assessment of ED Other sources of assistance

Table 2 (concluded)

EVALUATION COMPONENT	CHARACTERISTICS	COMPONENT VARIABLES
OUTCOMES		
Primary Impacts	Adoption scale	Adoption scope (number of components in use) Adoption level (number of classrooms, grades, schools)
	Fidelity	Adoption fidelity (replication vs. modification of methods and materials)
	Magnitude of change	Project innovativeness (newness of methods and subject matter)
	Perceived complexity	Implementation complexity (staff and resources involved, replacement vs. supplement) Implementation problems (number, nature, severity)
	Perceived success	Implementation success
	Valuation	Subjective evaluation of project
	Secondary diffusion	Secondary diffusion (others informed)
Process Impacts	Training support	LEA evaluation of pre-start-up training LEA evaluation of post-implementation training
	Materials support	Project materials received (types) LEA evaluation of materials
	Developer support	LEA evaluation of demonstration site Assistance by Developer LEA evaluation of Developer
	Facilitator support	Assistance by Facilitator LEA evaluation of Facilitator Financial assistance from Facilitator
	External support	LEA evaluation of outside assistance received
	LEA evaluation	Formal impact evaluation (types, sources of assistance)
	Cost	Costs (incremental cost to LEA to date)

- Characteristics of Facilitator staffs and operations, with attention to unique and overlapping roles and functions.
- Characteristics of Developer staffs and operations, with attention to unique and overlapping roles and functions.
- Coordination of NDN activities and operations.
- The technical assistance component of the NDN, its accomplishments and strengths, its omissions and weaknesses.
- The organizational infrastructure of the NDN--leadership, communication, special groups, conflicts, formal networking, informal networking.
- Recent evolution of the NDN, with attention to factors shaping the emergence of goal redefinitions, communication and power structures, role definitions, norms, and sentiments.

Goal 4: To conduct policy analyses on evaluation findings and advance specific recommendations regarding the continuation of the NDN

This fourth major goal of the evaluation involves a reconsideration of findings in terms of the overall federal mission of encouraging the spread of new and successful educational practices to schools throughout the nation. In these analyses, the distinctive features, operating characteristics, and evidence of effectiveness of the NDN, as identified through our evaluation, are considered from the perspective of the federal responsibility for sustaining dissemination systems like the NDN. Alternatives to continued support, and their implications, are considered in formulating our policy recommendations. Additional policy questions that are analyzed and discussed and for which specific recommendations are advanced include:

- What should be the state and local levels of participation in and support of future NDN activities?
- What incentives exist or can be developed to encourage state and local agencies to assume a greater share in the support and continuation of the NDN?
- What range of current OE programs should be accommodated by an NDN-type diffusion system?
- What policies should govern the selection of innovations for support and the level and duration of support for Developers?
- What should be the Facilitator funding policy?

- What technical, organizational, and administrative assistance should be managed at or conducted from or coordinated at the federal level?
- How should NDN-type activities be coordinated with other Education-Division dissemination programs (e.g., NIE)?
- What procedures and criteria should be developed and employed to monitor and assess the functioning and effectiveness of NDN-type activities?
- What additional investigations should be undertaken by OE?

These policy analyses and consequent recommendations are presented in Chapter 6 of this report.

Summary of Goals and Methods

The preceding overview describes the main goals or themes of the NDN evaluation and provides general information regarding the methodology employed in conducting this evaluation. It should be noted that although the methodology was, in fact, quite complex, it is de-emphasized in the body of this report so that more attention can be given to the evaluation issues, findings, and implications. Table 3 summarizes the main methodological components of the evaluation and identifies the major goals served by each. Also, this table provides indication of nature, scope, and focus of evaluative information obtained through each such component. This, then, provides an overall sketch of the evaluation design used to develop findings discussed in the remainder of this report. Readers interested in more extensive discussion of the evaluation design, procedures, data analysis methodology, and statistical findings are referred to Volume II of this report.

Table 3 introduces several new terms and abbreviations that require definition before the table can be interpreted conveniently. SEA is an abbreviation for State Education Agency and can also refer to the dissemination unit within the state department of education. The Educational Diffusion project (ED), based at the Far West Laboratory for Educational Research and Development, is the centralized technical assistance component added to the NDN by the Office of Education in July 1975. Site visit sample refers to the multistage sample of

Table 3
SUMMARY OF EVALUATION METHODS*

Methods	Description	Data Base	Primary Evaluation Goals Addressed
OE Program Review	File review of Developer and Facilitator grant applications, interim reports, NDN documents, JDRP; staff interviews	300 source documents 12 program officers	1,4
Status Survey I	Mail-out survey to Cohort I Developers, Facilitators, SEAs, and adopters	44 Developers (79% of 55)† 61 Facilitators (79% of 77) 906 LEAs (70% of 1,307)	2,3
Conference Observations	Observation/documentation of national and regional NDN conferences and of local project-specific events (awareness or training)	3 national conferences (100%) 5 regional conferences 12 local conferences	1,3,4
Site Visit Interviews	Interviews with administrators, teachers, pupils and staff at Facilitator, Developer, and adopter sites in the site visit sample	16 Facilitators 16 Developers and their demonstration sites 34 adopters	2,3
Site Visit Implementation/ Observations	Observation ratings and file review of demonstrations and adopter sites in visit sample	16 demonstration sites 34 adopter sites	
Technical Assistance Observation/ Interviews	Review and observation of technical assistance provided by technical assistance contractor (Far West Lab); field interviews of technical assistance (ED) staff	20 visits to ED 2 cluster meetings 6 staff interviews	1,3,4
Spring 1976 Survey NDN Evaluation Survey	Mail-out survey to all Cohort I and II Facilitators, Developers and sample of adopters.	NDN Evaluation Survey 64 Facilitators (83% of 77) 62 Developers (93% of 68) 1045 LEAs (72% of 1,460)	2,3
Site Visit Sub-Survey	In-depth survey of subsample of principals, teachers, and central administrators in interview sites	Site Visit Sub-Survey 149 teachers (64% of 234) 30 principals (77% of 39) 19 central administrators (73% of 26)	
General Literature Review	Review and synthesis of relevant literature in education innovation, dissemination, and change	300 references and documents	1,2,3

* Further described in Volume II.

† Numbers in parentheses indicate return rate and number surveyed. For example, 55 Status Survey I forms were sent to 55 Developers; the 44 Developer returns represent a 79% return rate.

16 Developers, 16 Facilitators, and 34 Adopters connected with these 16 Facilitators and Developers. This sample was drawn from among Cohort I participants so as to be maximally representative of the range of Facilitator and Developer types and to include at least two adopters for each Facilitator and each Developer. Participants becoming involved during the first formal year of NDN operations (1974-75 school year) are described as Cohort I; those joining after June 30, 1975, are defined as Cohort II.

The Data Base (return rate) entries are essentially self-explanatory, indicating the number of data source units involved in the evaluation activity. For example, the OE program review involved reading over 300 source documents (grant applications, internal memoranda, conference reports, project interim reports, etc.) and conducting interviews with 12 program officers within OE and the NDN. Similarly, the Status Survey I involved a self-report questionnaire survey completed by 44 (79%) of the Cohort I Developers, and so on.

Finally, the "Goals Addressed" column indicates which of the general summative and formative evaluation goals are primarily addressed by the evaluation activity. Thus, for example, Program Review activities were primarily relevant to Goals 1 (description of the approach) and 4 (policy recommendations), whereas the Network Evaluation Questionnaire surveys were primarily relevant to Goals 2 (overall process and outcome descriptions) and 3 (organizational analysis of the NDN). It should be noted that this goal distinction is intended only to communicate the relative emphasis placed on the various evaluation activities, since in fact all activities address all goals to some extent.

In summary, then, this evaluation of the NDN relies far more heavily on observation, interview, and document review procedures than on quantitative-analytic procedures.

Report Organization

The remainder of this report is organized to present, in succession, findings, interpretations, and discussion of evaluation issues corresponding to the four major goals described above. In describing and discussing these findings, we have held technical detail to a minimum and instead have focused on the relevance and implications of the findings. This is consistent with the main purpose of this study, namely, to describe the characteristics and processes of the NDN and to obtain insight into the extent and causes of its effectiveness.

Chapter 2 provides a discussion of the National Diffusion Network--its emergence, current composition, structure, method of functioning, and historical background, as well as some pertinent theoretical and empirical considerations.

Chapter 3 is a description of the overall elements of the NDN strategy in the initial stages (outreach, follow-up, secondary awareness, and pre-adoption training) of diffusion. We describe tactics most characteristic of the NDN approach and evaluate their apparent consequences and effectiveness. These tactics and process characteristics are collectively referred to as elements of the initiation stage of program diffusion.

Chapter 4 is a description of the more focused activities and tactics involved in the implementation stage of the diffusion process. This description covers both NDN events and the role of LEA factors in influencing adoption outcomes. Relevant characteristics of adoptions effected by the NDN are then related to process, innovation, and adopter context variables.

Chapter 5 presents an organizational analysis of the NDN as observed and documented over the term of the evaluation. From the perspective of the NDN as a temporary system, a number of issues relating to its apparent effectiveness (as well as problems) are identified and discussed. These include internal communication, goal redefinitions, technical assistance, normative values, and informal networks, to name a few. The chapter concludes with recommendations for enhancing the NDN strengths and resolving its problems.

Chapter 6 presents a policy analysis of various issues in the continuation, general administration, and support of NDN-like dissemination strategies. Issues are discussed and specific recommendations are advanced regarding, among other things, the development of incentives for increased state participation and support, cross-program or cross-agency participation, innovation and Facilitator funding policy, and future monitoring and administration procedures. A discussion of next steps and of future needed studies is also presented.

Each chapter concludes with a summary that highlights the more important findings, implications, and recommendations. At the end of the report is a brief appendix containing diagrams of several typical or illustrative diffusion patterns.

CHAPTER 2

THE EMERGENCE OF THE NATIONAL DIFFUSION NETWORK

In this chapter the emergence of the National Diffusion Network is traced and its intended structure and functioning as an Office of Education (OE)-sponsored strategy for encouraging the spread of exemplary educational programs and products is discussed. The NDN's major components, including the innovations, the funded participants (Developer/Demonstrators and State Facilitators), and the Educational Diffusion project created in part to provide centralized technical assistance to the NDN are described. The intended role of local education agencies as the targets of this innovative diffusion strategy is reviewed, as are the ways in which the OE invited state education agencies to participate in NDN activities.

To develop a perspective from which to view the NDN's actual organization, operations, and accomplishments, the NDN's historical and theoretical foundations are reviewed. Several OE-sponsored efforts to foster educational change are described briefly, and some important developments that have influenced the study and practice of diffusion and adoption of educational innovations are discussed. The chapter concludes with a summary of some distinctive features of the NDN strategy.

Creation of the National Diffusion Network

With ESEA, Title III, scheduled to expire at the close of FY 1975, the OE in 1973 called together representatives of the federal and state Title III staff and other interested parties to plan for the Section 306* funds that had not yet been allocated. At the time of this meeting,

* Under Section 306 of Title III, 15% of the annual program budget was reserved as the Commissioner's discretionary fund. This money was used to support LEA programs responding to needs and priorities defined at the national level. The balance of ESEA, Title III funds flowed to LEAs through state education agencies.

state-operated Identification, Validation, and Dissemination (IVD) procedures existed for diffusing successful Title III projects and practices. Because these procedures operated within states and at state discretion, however, they did not constitute a national-level "diffusion system." Accordingly, this planning group recommended that OE use the remaining Title III, Section 306 funds to disseminate information about existing programs and to support the adoption of these programs by interested school districts.

As a result of this meeting, a preliminary version of what eventually became the current NDN emerged. This early version, sometimes called the Diffusion/Adoption Network, identified three categories of participants: The Developer of a promising educational program or practice; a linker agent, or Facilitator, to bring together potential users with program providers; and local schools which might adopt the Developer's program or practice. The goal of this approach has been "to encourage a free flow of successful ideas, products, techniques, and practices across state lines and to facilitate the replication of exemplary programs by school districts who determine that a given educational activity meets their local needs" (OE Memorandum to Superintendents, February 11, 1974). This goal suggests two somewhat distinct objectives for the program: widespread awareness of the innovations within the educational community, and implementation of these innovations by practicing educators. Thus the approach is intended to produce both knowledge and improvement-oriented change based on local choice.

To realize these objectives, in February 1974 OE invited interested and qualified LEAs to apply for Developer/Demonstrator*, State Facilitator, or Adopter grants. Funds were subsequently awarded on the basis of:

* Because Section 306 funds were OE discretionary, the architects of the NDN made use of the OE Dissemination Review Panel (now including representation of NIE and known as the Joint Dissemination Review Panel, or JDRP) in reviewing and validating promising educational practices, thus establishing a central eligibility standard for Developer/Demonstrator qualifications.

(1) availability of Title III, Section 306 funds within a given state, (2) State Education Agency recommendations, and (3) number and quality of applications submitted. In July 1974, Title III diffusion grants totalling \$9 million were awarded to 32 Developer/Demonstrator programs, to 54 State Facilitator projects representing 31 states, and to a small number of local adopters.

Two subsequent developments were to critically affect the further evolution of the NDN. First, a report by the Rand Corporation on its study of OE change agent practices (Rand, 1974) recommended against large local adopter grants, arguing that these may serve to attract LEAs with motives other than program adoption. Subsequently, OE withdrew the adopter grant category and altered its Developer and Facilitator grant terms to provide funds in these grants for assistance to LEAs as needed in the adoption process. Second, the original diffusion program was created on a one-year operational plan, as ESEA Title III was scheduled to expire at the end of FY 1975 (i.e., the 1974-75 school year). But in February 1975, Congress passed a continuing resolution that extended ESEA, Title III for another year. From the Section 306 discretionary fund, \$8.5 million became available to support a second year of NDN operations. First-year participants were invited to apply for continuation grants, and qualified LEAs were eligible to apply for new Facilitator or Developer grants. During the second year, the Diffusion/Adoption Network was renamed the National Diffusion Network. Developer grants were awarded to 66 programs (31 new and 35 continuing), and 76 State Facilitator grants were awarded (22 new, 54 continuing) to support Facilitator efforts in 36 states.

Elements of the NDN

Figure 1 displays schematically the intended flow of an NDN innovation. As the figure indicates, development and validation of the programs occur prior to entry into the NDN. Within the NDN, it is expected that Facilitators and Developers will join forces to provide materials and assistance intended to inform LEAs of the innovations and services available through the NDN, to prepare LEA personnel for implementation of the innovations,

NATIONAL DIFFUSION NETWORK

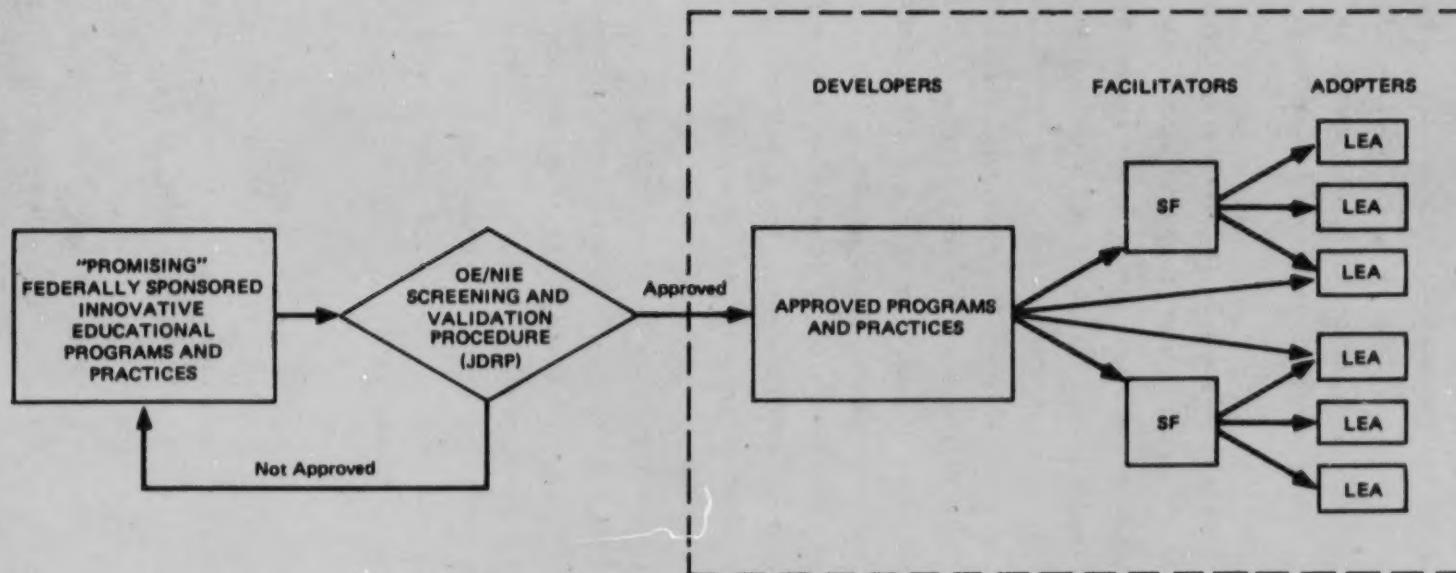


FIGURE 1 OVERALL SCHEMATIC OF THE NATIONAL DIFFUSION NETWORK, USOE

and to support and monitor program adoptions. It should be noted that Figure 1 is not intended to portray the NDN process as linear or sequential from Developers through Facilitators to LEAs. Rather, Figure 1 is more representative of the initiation or outreach stage of the process.

The NDN Innovations

The innovations in the NDN pool are actual operating programs, developed and still in use in public school systems, and approved for national dissemination by the JDRP. Included is a broad range of program types, usually with multiple offerings in a given content area. The programs range from those that serve preschoolers to those that serve twelfth grade; several programs also include parent involvement components. The innovations range in complexity from instructional units that can be added to a classroom's ongoing curriculum to organizational arrangements that may affect entire schools or school systems. The majority of the programs include instructional components, emphasizing curriculum content, instructional methods, or both. As such, the innovations are aimed primarily at the teaching staff within the schools. Although a majority focus on basic skills, such specialized areas as environmental studies, physical education, industrial arts, social studies, and the arts are represented.

A classification scheme used in the NDN program catalog* groups the innovations into seven general clusters. Table 4 identifies within each cluster the programs funded for dissemination in the 1975-76 school year. The brief descriptions of these seven clusters that follow emphasize the common features of programs in each group, but each cluster encompasses considerable variation in the methods and materials of instruction used.

Alternative/Secondary--The six programs included in this cluster represent alternatives to traditional curriculum. They are designed primarily for use with junior high and high school students--in some cases mainly those students who have been dissatisfied or unsuccessful

*Educational Programs that Work, September 1975.

Table 4

PROJECTS FUNDED AS NDN DEVELOPER-DEMONSTRATORS (1975-76)

Alternative/Secondary

- Project Adventure
- Alternative Learning Project (ALP)
- Curriculum for Meeting Modern Problems (New Model Me)
- High School in the Community
- Institute for Political and Legal Education (IPLE)
- Senior Elective Program

Early Childhood/Parent Readiness

- Added Dimensions to Parent and Preschool Education
- Cognitively Oriented PreKindergarten Experience (COPE)
- Dale Avenue Project
- Early Childhood Preventive Curriculum (ECPC)
- Early Prevention of School Failure
- Family Oriented Structured Preschool Activity
- Personalized (Seton Hall Preschool)
- Project Home Base
- Home Start
- Parent Readiness Education Project (PREP)
- Saturday School: Parent-Child Early Education
- Project SEE (Specific Education of the Eye)
- Strategies in Early Childhood Education

Environmental

- ECOS Training Institute
- Project ICE (Instruction-Curriculum-Environment)
- Project KARE (Knowledge Action to Restore our Environment)
- Pollution Control Education Center

Reading/Language/Math

- Project Aloha
- Alphaphonics Reading Readiness Training Program
- Project Catch-up
- Conceptually Oriented Mathematics Program
- Diagnostic/Prescriptive Arithmetic (DPA)
- Help One Student to Succeed (HOSTS)
- Project INSTRUCT (Instructional System for Teaching Reading using Continuous-Process Technology)
- Learning to Read by Reading
- New Adventures in Learning (NAIL)
- Project PEGASUS-PACE: Continuous Progress Reading Program
- Pupils Advancing in Learning (PAL)
- Right to Read
- Project R-3: Readiness, Relevance, and Reinforcement
- SDR: Systems Directed Reading
- Vocational Reading Power

Table 4 (Concluded)

Reading/Language/Math (Continued)

Individualized Language Arts

K-3 Reading: Program Development Through Process

Specialized Curriculum/Special Interests

Community Planning Council on Educational

Alternatives (CPCEA)

Drug Prevention Education

Health and Optimum Physical Education

Media Now

Occupational Versatility

Talents Unlimited

Urban Arts Program

Special Education/Learning Disabilities

All Children Totally Involved Exercising (ACTIVE)

Contract Learning for Educable Mentally Retarded
Students

Engineered Classroom for Students who are both
Educably, Mentally Handicapped and Behaviorally
Maladjusted

Project FAST (Functional Analysis Systems Training)

Project FOCUS

Project IDEA

Project Learning Disabilities: Early Identification
and Intervention

Northwest Special Education

Pilot Project Utilizing Supportive Personnel using
Behavior Modification Techniques with Articulatory
Disordered Children

Pre-K Prescriptive Teaching Project for Disadvantaged
Children with Learning Disabilities

Re-Ed School

Remediation for Children with Learning Deficits through
Precision Teaching: The Sacajawea Plan

Project SHARE: Sharing High Yield Accountability with
Resource Educators

Project Success for the SLD Child

Training/Organizational Arrangements

Demonstration Evaluation Center

Disseminating Computer-Based Planning Resources through
Project Simu-School: The Dallas Component

Project Learning Experience Module

PATL: Positive Attitudes Toward Learning

St. Paul Open School

Project Success Environment

when placed in more traditional programs. These alternative approaches provide strategies for enhancing the immediate relevance of education to students, for example, by making use of resources outside the school and involving students in community activities.

Early Childhood/Parent Readiness--The aim of these twelve enrichment programs is to promote learning readiness among very young children--preschool, kindergarten, or first grade. Several include fairly intensive parent training components. Most are intended for use with children who display early symptoms of potential learning problems. These programs include techniques for identifying "high risk" children, for diagnosing their specific needs, and for developing individualized approaches to increase learning readiness and social skills needed to succeed in school.

Environmental--The four programs in this group have a common focus on improving students' environmental awareness, understanding, and concern. All four programs are intended for use with pupils of varied abilities throughout both the elementary and secondary grades. The individual programs use varying combinations of instruction and activities that involve students in actual measurement and improvement of their school and community environment.

Reading/Language/Math--The sixteen programs in this group emphasize development of basic skills, mainly in the elementary grades. Most are designed for use by classroom teachers with pupils of all ability levels, although some include separate components for children in need of supplementary help from specialists. Curriculum content and instructional strategies vary widely across programs in this group, but use of individualized diagnostic/prescriptive approaches is widely emphasized.

Specialized Curriculum/Special Interests--As the title of this cluster implies, these six programs focus on varied subject areas. For example, a physical education program emphasizes movement education over

traditional competitive sports. A junior high industrial arts program emphasizes student-managed learning in an open shop. Another program is designed to enhance student awareness and understanding of mass media.

Special Education/Learning Disabilities--These sixteen programs provide strategies for serving children with special needs, including a variety of handicapping conditions and learning disabilities. Some programs include techniques for identification and diagnosis and for provision of comprehensive services. Others focus on specific handicapping conditions or specific curriculum areas. Although some programs are designed for use by specialists, with children removed from standard classroom settings, mainstreaming is generally emphasized.

Training/Organizational Arrangements--These five programs focus on the environment within which instruction is carried out rather than on instructional content, per se. The programs emphasize such strategies as team teaching, open education, and use of the community.

In spite of differences in content and target group outlined above, the NDN programs share some common features. These innovations have undergone several years of development and implementation. Most programs became operational between 1968 and 1970. Their development was supported with federal funds (in most cases from ESEA, Title III, although some programs drew support from a variety of sources).

Probably the most distinctive feature of the NDN programs is that they were developed by practitioners working in public school environments.

This is an important distinguishing characteristic of the NDN, since earlier dissemination mechanisms (e.g., ERIC) have been created to promote the spread of information and innovations developed by researchers in research-oriented settings.

NDN Change Agents

The NDN has included two different types of change agents:

- (1) Developer/Demonstrators, who serve as program experts, and (2) State Facilitators, who are associated with particular geographic regions

and who attempt to establish connections between the program experts and those who wish to adopt a program.

Developer/Demonstrators. Developer/Demonstrators are agents funded by OE who have innovations that have been approved by the Joint Dissemination Review Panel (JDRP).^{*} As the term "Developer/Demonstrator" implies, they are typically the originators of the programs. They bear the major responsibility for communicating the form and substance of their individual innovations to interested educators through demonstrations, materials, and training.

LEAs with JDRP-approved innovations are eligible to apply for Developer/Demonstrator status. Any product or practice validated by the JDRP may be distributed through the NDN. However, validation does not guarantee funding to the originator of an approved program; during the period covered by this evaluation, Developer/Demonstrator grants were awarded to approximately half of the JDRP-validated programs. Federal support for individual Developers ranged from less than \$15,000^{**} to more than \$350,000 per year, although most grants were between \$50,000 and \$100,000 with an average of \$70,000.

The memorandum announcing the availability of Developer grants defined relevant activities as including:

^{*} The JDRP was established as a quality control mechanism for dissemination activities carried out within HEW's Education Division. Basically, the JDRP reviews programs and products targeted for dissemination with federal support to ensure that claims of effectiveness are backed by sound evidence. The JDRP is not a formal component of the NDN. However, only programs approved by the JDRP are eligible to receive Developer/Demonstrator grants. The establishment, purposes, and procedures of the JDRP are discussed later in this chapter.

^{**} Total Title III, Sections 306 funds available for each state was determined on a formula basis rather than according to the number of programs funded. As such, Section 306 funds available to each of the nine New Jersey Developer/Demonstrators ranged between about \$15,000 and \$25,000 per year. Most of the New Jersey projects received additional money from the state to support materials development and other diffusion activities.

the development and dissemination of a variety of information packages about the project, the refinement of training materials for use with school districts planning to adopt the program, the maintenance of a small staff to provide training to potential adopters at the development site and limited technical assistance at adoption sites, and other activities clearly related to the demonstration nature of the project (OE Memorandum to Superintendents, February 1974, emphasis added).

Developer grants are intended to support diffusion-related activities only; LEAs are required to cover costs of maintaining the local program with other funds.

A somewhat more detailed description of the Developer role evolved during the first year of NDN operations. The role description presented to new participants at the start of the second year identified the following functions:

- Identify the "core elements" of the program (that is, those features the Developer judges essential to its success).
- Develop and make available materials describing the program and materials needed to implement the program.
- Maintain a demonstration site for visitors to observe an operating program.
- Make the final selection of adopters.
- Conduct training sessions.
- Define evaluation needs to enable adopters to determine program impacts.
- Provide follow-up assistance to adopters who have begun implementing the program (Narayanan, July 1975 orientation conference).

Probably the closest predecessor of the NDN Developer/Demonstrator is the demonstration school. Both are expected to carry out two functions simultaneously--to provide for the educational needs of an on-site student population and to serve as a model for educators from other school systems. There are, however, some important differences. First the typical demonstration school operates within a university setting, is staffed by university personnel, and serves the children of a university community. The typical NDN Developer is located within an urban or suburban public school district, and is associated with a particular

combination of practices and/or products developed locally with federal support and approved for dissemination by the JDRP. Second, the NDN Developer is expected to assume responsibility for assisting adopters with installation and operation of the innovation--through development of materials, provision of training, and follow-up assistance in the implementation stage. Finally, the Developer is involved in the NDN, an organization that offers the potential for dissemination on a nationwide scale but that also expects the Developer to yield certain aspects of the change agent role to a second category of participant--the Facilitator.

State Facilitators. NDN State Facilitators are associated primarily with a geographic region (usually a state or a region within a state). Whereas Developers provide the programs that are the NDN's resource base, Facilitators represent the Network's linkage component. They bear the major responsibility for informing LEAs in their areas about the NDN and the types of programs it offers and for putting interested LEA personnel in touch with appropriate Developers.

Facilitators are not affiliated with specific innovations and hence do not go through the JDRP approval process before becoming part of the NDN. However, Facilitators are recommended by their State Education Agencies prior to receiving federal funds to support their diffusion efforts. Title III, Section 306 funds were not available to support Facilitator activities in all states. The map in Figure 2 identifies the 36 states served by funded Facilitator projects. Since several states elected to install multiple Facilitator projects, a total of 76 Facilitator projects operated during the 1975-76 school year. Federal support for individual Facilitator projects ranged from about \$15,000 (in states with multiple Facilitators who, in some cases, received state funds for additional activities) to \$300,000 per year.* The average 1974-75 grant was \$90,000; the average 1975-76 grant was \$75,000.

*The somewhat larger New Jersey grants supported both the Facilitator project and Developers' diffusion activities.

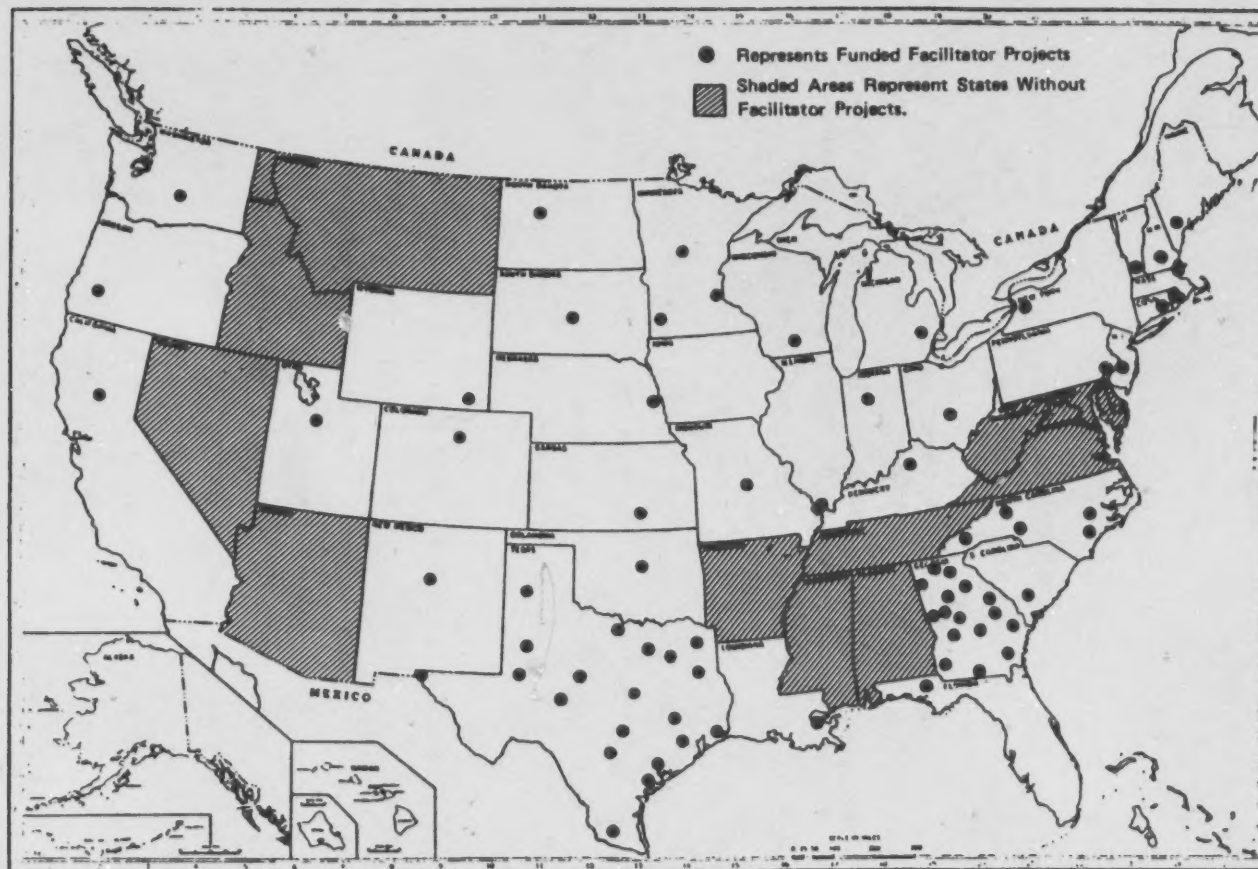


FIGURE 2 LOCATIONS OF NDN FACILITATOR PROJECTS INCLUDED IN THIS EVALUATION
This figure includes projects in 1974-75 and 1975-76.

Activities considered appropriate to the Facilitator role, as defined in the original grant announcement, include providing information about Developer projects to interested school districts, helping districts match their needs with appropriate projects, and providing limited funds to support visits to Developer sites by school personnel and to cover other adoption costs. The expanded role description developed during the first year of NDN operations included the following responsibilities:

- Maintain a library of Developers' program materials.
- Inform LEAs about the NDN and the programs available for adoption.
- Assist LEAs in needs assessment activities and help them match local needs and interests with appropriate programs.
- Develop criteria and procedures for reimbursing school districts for part or all of their adoption expenses.
- Provide assistance to adopters as needed throughout the adoption process (Narayanan, Orientation Conference, July 1975).

The Facilitator role was conceived largely as a mechanism for the efficient and orderly diffusion of Developers' programs without the excessive demands on Developers and potential adopters that would result from 66 separate intensive outreach campaigns, each conducted on a nationwide scale.

An important feature of the NDN approach to diffusion is the provision of funds that Facilitators may use to reimburse LEAs for expenses incurred in the adoption process. OE has not expected Facilitators to award grants to LEAs that would cover such major operating expenses as salaries of adopter staff or construction and maintenance of special facilities. However, OE has expected Facilitators to use a portion of their grants to reimburse LEAs for such limited adoption costs as travel to awareness conferences and demonstration sites and purchase of project materials from Developers.

The best precedent for the Facilitator is probably the extension agent of the Pilot State Dissemination Project (see Sieber, 1972). Both roles are based on the assumption that the needs and interests of users vary and, accordingly, that the resources most appropriate to serving

these interests also vary. Both further assume that a linkage agent who serves a bounded geographic region (a state or region within a state) will be able to make suitable connections between users and a resource base. In the Pilot Project, however, the linkage agents connected users to an information base and tended to assume the role of technical consultant to the users. In the NDN, Facilitators are expected to link users to Developer projects--a resource base that includes both static information about specific innovations and direct assistance from the originators of the innovations. NDN Facilitators are not generally expected to be involved in transferring technical or programmatic details of the innovations to their adopters.

Adopters

Public and private school systems represent the intended adopters of the NDN innovations. The NDN was conceived by OE as a strategy for making available to LEAs programs and practices whose effectiveness in school settings had already been demonstrated. Although wide-scale awareness of the programs and products distributed through the NDN is a desired outcome, OE has viewed the NDN as a strategy for inducing directed change in educational practice through informed local choice.

Implicit in OE's inclusion of a fairly broad range of programs in the NDN pool of innovations is the assumption that local interests and priorities vary. OE has generally assumed that, given adequate exposure to the range of programs and products available for adoption, individual LEAs would focus their attention on particular programs that addressed recognized local needs and priorities. OE has also expected that LEA response to information and assistance received from NDN participants would extend beyond awareness or interest into actual use of the NDN programs and products.

Another assumption implicit in the design of the NDN is that LEA personnel often lack the incentives and/or the resources to undertake searches for promising new programs on their own initiative and that a delivery system is needed to create awareness of exemplary programs within the practitioner community and to stimulate interest in adoption

of such innovations. OE has not generally expected LEA personnel to initiate contact with the NDN. Instead, the NDN participants are expected to undertake active outreach campaigns in order to establish contact with LEA personnel and to stimulate interest in adoption of the innovations.

Finally, OE has also assumed that, given adequate information and assistance from NDN personnel, school systems will be motivated to adopt the innovations without federal incentives or sanctions. As described earlier, the plan to award Section 306 grants to LEAs for adoption of NDN programs was implemented only on a very small scale during the 1974-75 school year; by the second year of NDN operations, the adoption grant program was discontinued. Instead, Facilitators were expected to subsidize some expenses incurred by LEAs during the adoption process.

State Education Agencies

Title III, Section 306 legislation called for grants to be administered through local education agencies rather than through the state departments of education. Hence, State Education Agencies (SEAs) were not assigned a formal role in NDN operations. However, OE involved SEAs in early planning activities and sought to maintain liaison with state agencies concerning Network activities.

OE invited the state agencies to nominate qualified LEAs to carry out the Facilitator role. In some cases, the state agency actually selected the Facilitator in advance by inviting a particular individual or group to submit an application. In other instances, an application was prepared on local initiative and was subsequently approved at the state level. The majority of SEAs chose to establish a single Facilitator project to serve the entire state. A few states elected to install multiple projects, each of which served a region within the state. The number of such regional Facilitators varied from three to nineteen in the four states electing this option.*

* States with multiple Facilitator projects were Georgia, Minnesota, North Carolina and Texas.

OE encouraged additional SEA interest and involvement in NDN activities. Facilitator projects were expected to work in close cooperation with the state agencies in order to ensure that their efforts were compatible with state programs and priorities. The OE Division of Supplementary Centers and Services^{*} has encouraged SEA Title III coordinators to carry out Facilitator functions in states lacking funded Facilitator operations.

Another area of interest to OE was the extent to which SEAs might assume responsibility for supporting NDN-type operations once Title III expired. Would SEAs be willing to fund Developers to take their programs out of state? Would they support a Facilitator group to "import" programs developed elsewhere? Could state money be used to support out-of-state travel (by Developers and/or adopters) for demonstrations, training sessions, and technical assistance?

Educational Diffusion Project

At the start of the NDN's second year of operations, the Educational Diffusion (ED) project was identified as a source of centralized technical assistance to the Network. The ED project, located at the Far West Laboratory for Educational Research and Development, was to provide a variety of services to the NDN as a whole and to make additional services available to individual Developers and Facilitators. ED's scope of work also included services to additional client groups outside the NDN, such as OE's Dissemination and Utilization Branch, other OE offices and personnel, and dissemination personnel in state education agencies.

The array of projected activities specified in ED's scope of work was quite broad, ranging from production and distribution of resource materials to consultation/technical assistance for NDN Facilitators and Developers to formulation of policy recommendations for future OE dissemination efforts. The emphasis, however, was on services that would be provided or made available to NDN Developers and Facilitators. Among the participant-oriented services planned were:

^{*} Now the Division of Education Replication.

- Distribution of diffusion-related publications.
- Operation of a weekly "call-in" period for individual inquiries.
- Design, graphics, and production advice.
- Publication of a monthly memo or newsletter.
- Visits to regional sites for conferences focused on shared concerns.
- General advice (and response to individual inquiries) on project organization and management.
- Consultation on impact evaluation and secondary diffusion.
- Consultation on presentations to potential adopters.

An important feature of this centralized technical assistance component for the NDN is that the intended recipients of the assistance have not been the LEA adopters of the innovations but rather the funded change agents themselves. Thus, many participants felt the ED component was to serve as an NDN exchange, providing them access to information and assistance regarding activities and events occurring in the network.

Historical Roots of the NDN

In many respects, the NDN represents a departure from previous federally sponsored attempts to promote large-scale innovation in education or to disseminate information and programs. Nevertheless, review of earlier OE programs suggests three important antecedents for the NDN effort:

- Federal funding of LEA-based innovations
- Creation of the Dissemination Review Panel
- Development of delivery systems.

These activities reflect the federal government's growing interest in, and support for, local development of educational innovations, identification of effective programs and practices, and diffusion of innovations to practicing educators. As such, it is our judgment that these events helped to define the shape of the NDN. The contribution of each factor is briefly reviewed below.

Federal Support for LEA-Based Innovations

Federal legislation passed in the mid and late 1960s set two important precedents for the NDN. It provided federal sponsorship for development of educational innovations by practitioners working in LEA settings, and it encouraged use of demonstration sites to promote the diffusion of new practices and materials to other educators.

Early OE efforts directed toward educational reform and renewal, such as the National Defense Education Act (1958) and the Cooperative Research Act (1961), provided support for innovation and curriculum development primarily in university-based research settings. With the passage of the Elementary and Secondary Education Act (ESEA) in 1965 came federal support for large-scale educational reform targeted directly to LEAs. Title I of ESEA provided for improved delivery of instructional and supportive services to economically disadvantaged children. Title III of the same legislation supported the creation of supplementary centers and services to develop and implement improved instruction for school-aged children. This legislation represented a broad base of federal support for innovation at the local level.

From its origin, Title III acknowledged the potential for diffusion of the locally developed innovations. Funds were used for development of model programs that could subsequently spread to additional schools and school systems. LEAs receiving Title III funds were encouraged to serve as demonstration sites to promote such diffusion, and to provide materials and/or training assistance to educators in other schools interested in installing similar programs.

Other legislation provided additional federal support for local program development in targeted areas such as education of the handicapped and bilingual education. Although the demonstration programs were considered exemplary, the spread of innovations from the demonstration centers to new sites was disappointingly small (Berman and McLaughlin, 1975). Nevertheless, these programs provided support to a considerable number of LEAs and enabled the development and implementation of an even larger number of local programs and materials. It was these local

programs--and particularly those developed under Title III--that OE chose to draw upon to make up a resource pool for the NDN. And it was the originators of the programs--practitioners with several years of experience using their innovations in LEA settings--to whom OE assigned a major role (as Developer/Demonstrators) in the NDN diffusion effort.

The Dissemination Review Panel

During the late 1960s and 1970s, OE became increasingly interested in making available for widespread use educational programs and products developed with federal funds. Concern for ensuring the quality of the programs to be disseminated also emerged. To meet this concern, OE established the Dissemination Review Panel (now including NIE participation and known as the Joint Dissemination Review Panel, or JDRP) in 1973. The JDRP's most recent statement of purpose, procedures, and criteria describes the Panel as an internal quality control mechanism intended to assure that products and practices disseminated by OE or NIE program offices are backed by appropriate evidence of effectiveness.

The Panel...acts as a self-restraining mechanism by which the Education Division facilitates informed local choice. Through the Panel, when an Education Division program office, representing the federal government, says that some particular educational practice or product is exemplary and is worthy of implementation by school systems, the assertion will have something behind it.

The Panel reviews all products/materials and practices/methods proposed for dissemination by any Education Division program office. Panel review is required before any Education Division program office can approve use of federal funds for the dissemination of any practices or products for which claims of effectiveness are made. (JDRP, 1976).

Approval does not guarantee dissemination funding, and the JDRP does not directly involve itself in the design or implementation of diffusion strategies.

The JDRP meets periodically to review programs and products nominated by OE or NIE program offices. Submissions are reviewed according to two general criteria: educational significance of the claimed effect and credibility of the evidence offered to support the claim. Approval

decisions are based on the considered judgments of Panel members rather than on specific standards related to these criteria. Approval requires a favorable recommendation by a majority of the members present. In its first three years of operation, the JDRP met more than 60 times and reviewed over 280 submissions, of which approximately 55% were approved for dissemination (JDRP, October 1976).

The JDRP was established prior to the emergence of the NDN and is formally independent of any specific OE or NIE diffusion effort. However, for the architects of the NDN, the JDRP served as a preliminary screening device that reduced to a manageable number the pool of programs eligible for diffusion. At the same time, it enabled OE and NDN participants to describe the programs available through the NDN as "successful," "exemplary," or "nationally validated."

Development of Delivery Systems

Along with the federal government's growing sponsorship of educational innovation came recognition of the need for delivery systems--mechanisms to promote the spread of effective practices. Federal legislation of the 1950s assumed that information and materials produced within the research sector would reach educators in the practitioner community via professional journals and other print media. By the mid 1960s, however, it became clear that knowledge generated in research institutions was not producing the expected impact on educational practice.

In an attempt to make the results of educational research more readily accessible, the Educational Resources Information Center (ERIC) was established in 1965. The creation of ERIC represented a major federal commitment to development of a comprehensive national resource base. Once again, however, the expected impacts on the practitioner community did not materialize (Paisley, 1973).

In the late 1960s, OE launched efforts to generate materials describing innovative practices that would reflect a practitioner orientation. These efforts included the IT WORKS series of booklets

describing exemplary demonstration sites and the PREP series of practitioner-oriented materials based on research results.

The Pilot State Dissemination Project, begun in 1970 by OE's National Center for Educational Communication and subsequently taken over by the National Institute of Education, represented a significant departure from these earlier efforts in its use of personal linkages between information sources and potential users. Borrowing from the agricultural extension agent model, this program supported the activities of field agents assigned to regions in three states. These agents worked directly with teachers and administrators, helping them to define their needs and interests and putting them in touch with information retrieval specialists who had access to materials available within the ERIC system.

The Pilot State Dissemination Project was an important precursor of the National Diffusion Network. While earlier efforts, such as ERIC, IT WORKS, and PREP, operated almost entirely on the resource base, the pilot project concentrated on building linkages between the resources and potential users. The evaluation of this effort concluded that the efforts of the persons acting as extension agents were essential to the success of this delivery system intended to serve educational practitioners (Sieber et al., 1972).

Theoretical Foundations

In the previous section, several federal efforts that preceded the NDN and which we feel helped to define its shape and objectives were reviewed. These activities emanated from OE's role in supporting the development and spread of new programs and products within the educational community. To provide a theoretical perspective on the NDN and our evaluation, it is useful to look at the groundwork for current thinking on diffusion of educational innovations.* For example, the classical diffusion model is

* References to the literature in this section are highly selective. They include some recent publications that identify considerations largely ignored in earlier work. Readers interested in a more comprehensive discussion of salient attributes of innovations, linkage agents, and adopters are referred to an earlier report written in connection with our evaluation of the NDN (Hall and Alford, 1976) and to the relevant chapters in Rogers and Shoemaker (1971).

the dominant paradigm that has influenced the thinking of most researchers for the last two and a half decades. Yet several biases in this model are now being rectified by a growing emphasis on the adoption of social innovations by organizations rather than individuals and a growing recognition of the need for practitioner-oriented delivery mechanisms.

The study of diffusion has attracted scholars in such varied fields as anthropology, sociology (especially rural sociology), medicine, public health, communication, marketing, education, economics, political science, psychology, geography, linguistics, and agricultural economics.

Most diffusion research has focused on (1) characteristics of adopters, (2) the s-shaped curve of adoption, (3) perceived attributes of innovations, (4) the role of opinion leaders and change agents, (5) types of communication channels, (6) transfer of ideas and technology across national boundaries, (7) social consequences of adoption on certain "traditional" societies, (8) correlates of innovativeness among industrial firms and schools, and (9) the innovation-decision process. We can describe the state of the art in the words of Everett Rogers: "diffusion research is a mile wide and an inch deep."

The Classical Diffusion Model

The classical diffusion research study is undoubtedly the Ryan and Gross (1943) investigation of the use of hybrid seed corn among Iowa farmers. Today, 3,000 research publications later, we understand much more about the way in which new ideas spread among such varied audiences as medical doctors, suburban housewives, industrial plant managers, and teachers. The theoretical framework that has guided most diffusion and change efforts has come to be called the "classical diffusion model"; a detailed explication of this model is provided by Rogers and Shoemaker (1971). The main elements in the "classical model" of the diffusion of new ideas are: (1) the innovation, defined as an idea perceived as new by an individual, which is (2) communicated through certain channels, (3) over time, and (4) among the members of a social system.

The Innovation--Downs and Mohr (1976) have noted that "innovation has emerged over the last decade as possibly the most fashionable of social sciences areas." This popularity is perhaps explained by the fact that innovation pertains to a very salient aspect of human behavior, and one that conjures an image of improvement and betterment. According to the classical model, an innovation's characteristics as perceived by the potential users will affect its rate of adoption. Five attributes frequently studied are: (1) relative advantage, the degree to which an innovation is perceived by adopters to be superior to the existing practice that it supersedes, (2) compatibility, the degree to which an innovation is perceived as consistent with the existing values and past experience of the individual, (3) complexity, the degree to which an innovation is perceived as relatively difficult to adopt, and as requiring some special skills and facilities for adoption, (4) trialability, the degree to which an innovation may be experimented with a limited basis, and (5) observability, the degree to which the results of an innovation are visible to others. These are not the only qualities of an innovation that affect the rate of adoption, but past research indicates they are most important.

Communication Channels--Communication is the process by which messages are transmitted from a source to a receiver, with the intent of affecting the receiver's behavior. A communication channel is the means by which the message gets from the source to the receiver (Rogers and Agarwala-Rogers, 1976). The essence of the diffusion process is the interaction by which one person communicates a new idea to one or more other persons. The communication channel by which a new idea reaches the receiver affects his/her decision to adopt or reject the innovation.

Communication Over Time--The time dimension is involved in the innovation-decision process, in the relative innovativeness of the individual, and in the innovation's rate of adoption in the social system. The classical model describes four main steps in the innovation-decision process: (1) knowledge, (2) attitude formation, (3) decision to adopt or reject, and (4) confirmation.

Social System--The members of a social system may be individuals, informal groups, complex organizations, or subsystems. Adoption rates are often different for the same innovation in different social systems. The social structure affects the rate of adoption via such individuals as change agents, opinion leaders, and linkage agents.

The classical model has been and still is the most popular paradigm for the study of diffusion of innovations in many fields. Many diffusion models of varying degrees of comprehensiveness have been proposed in the literature, since the emergence of the classical model in the 1960s. Hood (1963) has suggested that there are three models for the study of innovations: (1) the organizational improvement model, (2) the extension network model, and (3) the R&D development and marketing model. Other attempts to modify the classical model include Havelock's (1971) commonly known Linkage Model, Clark and Guba's (1974) Configuration Model, and the Innovative Process Model suggested by researchers at the Rand Corporation (1975).

Sieber (1974), in a plea to avoid the competition and confusion that would result from favoring one model over the other, suggests that perhaps the best strategy "is to leave all this behind and get out into the field; only then will we be able to develop a conceptual framework that will both illuminate and reflect reality."

Biases in Previous Educational Innovation Research

The paradigm that has dominated federal policymaking processes has been the research, development, diffusion approach to change. The life-blood of this linear approach is the knowledge generated by researchers; the generation of knowledge is followed by conversion of research results to a transferable product, which is then disseminated via various channels, until finally it reaches local schools who adopt the innovation. This model assumes a rational change process that occurs in a logical sequence and assigns major responsibility for research, development, dissemination, and adoption to separate groups and institutions. Educational practitioners are identified as consumers or adopters--a passive audience, eagerly

waiting for innovations and ready to adopt them. This model has also generally assumed that information alone is sufficient and that there is little need for interpersonal communication links between the source of an innovation and its adopters.

In spite of recent emphasis on the importance of knowing the practitioner's perspective (user orientation), motivations, and constraints, a majority of the currently available models of planned change do not really incorporate the practitioner's point of view. How can knowledge being generated be more useful for educators? How can educational researchers involve practitioners in the design, production, diffusion, and implementation of innovations? The gap between the research and practice is quite unfortunate.

Table 5 presents a comparison of elements of the classical diffusion model and their extensions into educational applications. As can be seen, a number of interesting contrasts emerge. For example, educational innovations are typically adopted collectively by a group. Unlike a farmer or doctor who can decide relatively independently which new method to use or technology to adopt, the individual educator is not alone in making the decision to adopt or reject an innovation. The use of a new drug is rather clearcut and easily understood by a medical doctor. Adoption of differentiated staffing in a school system is complex, and often is not clearly understood by teachers.

In a revealing series of studies on change in education, Professors Charters and Pelligrin note the difficulties resulting from a lack of clarity as to what an educational innovation means and from an equally serious lack of "how to do" knowledge.

Differentiated staffing was little more than a word for most participants, lacking concrete parameters with respect to the role performance of participants, their modes of interdependence and relationship, and generally the conduct of the instructional process. The word could (and did) mean widely differing things to the staff, and nothing to some. Thus, the innovation, if it can be called that, was little more than an evocative term whose substantive meaning was to be supplied by the professional staffs in the course of the project. (Charters and Pelligrin, 1973.)

Table 5

AN EXTENSION OF THE CLASSICAL DIFFUSION
MODEL TO EDUCATION APPLICATIONS

Elements of the Classical Diffusion Model	Extension and Application to Educational Innovations
1. <u>Adoption Locus</u>	
Individual decides to adopt or reject an innovation.	Systems or organizations collectively decide to adopt or reject innovation(s).
2. <u>Sources of Innovation</u>	
Most innovations are developed at R&D laboratories.	Most innovations come from universities, regional laboratories, and commercial suppliers.
3. <u>Benefits Accrued</u>	
Payoffs and gains visible and acquired relatively early.	Payoffs and gains show up much later and a long time elapses between use and results.
4. <u>Technology Employed</u>	
Processes and their consequences are simply and clearly understood by the adopter.	Processes and their consequences are complex and not very clearly comprehended by the members of a social system.
5. <u>Information Direction</u>	
Most of the information flow is top-down and one-sided.	The pattern of communication is more interactive and omnidirectional.
6. <u>Implementation</u>	
Clear-cut implementation and definite knowledge when using an innovation.	Unclear as to when implementation occurred because innovations are vague and general in nature.
7. <u>Innovations Studied</u>	
New drugs, agricultural and technological innovations, commercial products.	Team teaching, individualized instruction, teacher development programs, differentiated staffing.

In a similar vein, Williams (1975) identifies specification failure (lack of clarity with regard to the content, procedures, and objectives of an innovation) as a common source of problems in efforts to bring about educational change.

Social Innovations and Their Adoption by Organizations

Much current thinking about educational innovation and diffusion is grounded in a theoretical perspective known as "general systems theory." The central credo of this theory is that the whole is more than the sum of its parts. The systems theory provides a holistic alternative to the mechanistic atomism of earlier efforts attempting to understand social phenomena by examining their components one at a time. Rather than focusing on the individual adopter, interest is now focused on the entire organization and its subsystems.

An understanding of organizational dynamics is essential as organizations increasingly are becoming the adopters of social innovations. For example, an investigation of the adoption of social studies curriculum in a public school would require examination of organizational factors and organizational dynamics (e.g., authority structures, rewards and sanctions, decision processes and mechanisms) as independent variables that may affect the fidelity, extent, rate, and continuation of innovations.

Hage and Aiken (1970, pp 122-123) found in their research on program change that "structural properties were much more highly associated with the rate of program change than attitudes toward change. This implies that the structure of an organization may be more crucial for the successful implementation of change than the particular blend of personality types in an organization."

The systems view of social innovations recognizes that innovations and new programs are confronted by the reality of the local environment and the organizational structure of the adopting unit. As such, it calls into question the notion of the passive receiver. Instead, the adopting unit is seen to play an active role in adapting the new idea to function

within the environmental sanctions and constraints of an organization. Also questioned is the assumption that a given innovation has a universal and unchanging applicability. "There is no single innovation that will work in all local settings, for those settings are not only different and unpredictable in specifics, but they are constantly changing" (House, 1974, p. 245).

Summary

In this chapter the emergence of the NDN and its intended structure and functioning have been described. Some important considerations emerging from the diffusion literature and several federal efforts to support innovation and diffusion within the educational community have been reviewed in order to develop a perspective from which to study NDN operations and impacts. Although the NDN does appear to embody concepts from the RDDA systems view, the configuration approach, and the linkage model, still it does not fit any of the currently available models entirely. Likewise, although the NDN draws upon the experience gained in earlier federal efforts, it represents in many respects a substantial departure from these efforts.

Major defining attributes of the NDN strategy include the following:

- (1) The source of the innovations is LEA-based Developer/ Demonstrators who invent and develop new ideas, perhaps with some assistance from technical and content specialists like college professors, R&D laboratories, or commercial suppliers. This emphasis on the local Developer represents a shift away from the R&D specialist sources of innovations and a recognition of the practitioner's credibility as a viable source of innovations.
- (2) The NDN provides a pool of innovations that encompasses a broad range of content areas and includes multiple programs within each area rather than a small number of standard innovations. The NDN strategy acknowledges the fact that innovations have potentially differential usefulness in meeting the needs of various audiences.

- (3) The NDN is intended to promote large-scale awareness of its innovations and actual use of the programs in public and private school systems. The NDN's goals include both the transmission of knowledge and directed change in educational practice. NDN planners assumed that, given information and assistance from NDN Facilitators and Developers, LEA personnel would be both motivated and able to implement the innovations in their schools.
- (4) The NDN approach to diffusion makes use of both written materials and personal contact. Neither written information nor in-person methods (e.g., demonstrations, training) was expected to accomplish the NDN's mission of promoting directed change by itself. Instead, the NDN planners assumed that some combination of materials and personal contact would be necessary and appropriate.
- (5) The NDN provides for direct personal contact between the sources of the innovations and the adopters. Rather than relying exclusively on written information or on intermediary agents (like the extension agents of the Pilot State Dissemination Project) to transmit technical or programmatic detail to adopters, the NDN was designed to encourage direct communication between the innovation developer and adopters.
- (6) The NDN includes the new role of Facilitator. The NDN Facilitator concept differs in an important way from linkage or extension agents in earlier diffusion or delivery systems. NDN Facilitators have not been expected to serve as technical experts who assume major responsibility for communicating the details of the innovations to adopters.
- (7) Facilitator funds may be used to subsidize some adopter expenses incurred in the adoption process. OE does not provide grants to LEAs to cover costs of installing and operating the NDN programs. However, Facilitators are expected to use some portion of their grants to reimburse LEAs for limited adoption costs, in particular for expenses associated with travel to awareness conferences and demonstration/training sites.

- (8) Centralized technical assistance and supportive services in the form of an NDN exchange are provided to the funded change agents.

The Educational Diffusion project was added to the NDN not to provide technical assistance to adopters but rather to serve the Facilitators and Developers.

CHAPTER 3

THE INITIATION STAGE OF THE NDN DIFFUSION PROCESS

Evidence of NDN Effectiveness

The fundamental measure of success for the NDN rests in its ability to affect directed change in schools. The NDN mission involves more than spreading information and creating interest in JDRP-approved practices. Rather, the NDN is designed to effect actual adoptions of the approved concepts and practices among school systems. Accordingly, the majority of evaluation emphasis focused on the characteristics of adoptions effected by the NDN, from both the diffusion and the adoption process perspectives.

The concept of adoption is complex and multidimensional. The central theme involves a conscious and deliberate decision on the part of the adopting agent to undertake some change. Change brought about by fiat or by non-conscious manipulations would not qualify as adoption. Accordingly, adoption is viewed as a process, having three more-or-less definable stages: initiation, implementation, and assimilation. Initiation refers to the arousal and interest-development aspects of the process. Implementation refers to the changes (cognitive, behavioral, affective) represented in the "putting into practice" aspects of the process. Assimilation refers to the modification, incorporation, and stabilization of the adopted practice within the adopting unit. The evaluation concentrates primarily on the first two stages.

Because "adoption" represents a complex, multidimensional process, simple tallies of "adoptions" have limited value in assessing the effectiveness of the NDN. Besides attention to stage of adoption, it is necessary to consider a wide range of other parameters of the process as adoption outcomes of interest. The variables listed below represent the primary outcome measures used in this evaluation:

- scale of adoption--both the number of classrooms, grades and schools in which the adopter implements the innovation (referred to in this report as level of adoption) and the scope of adoption (how much--or how many components--of the total innovation the adopter chooses to adopt)
- magnitude of change--the relative innovativeness of the project, from the adopter's perspective; that is, the extent to which the adoption results in introduction of new practices and/or subject matter into the schools and districts involved
- fidelity--the extent to which the original project's essential features have been preserved by adopters; the nature and extent of local modification, adaptation, and reinvention that characterizes the adoption
- complexity of adoption--the types and number of staff and resources involved in adoption and implementation; the nature and severity of problems encountered in adoption and implementation
- perceived success--local participants' satisfaction with the adopted project
- valuation--local participants' subjective judgment of the adopted project's merit and relevance
- secondary diffusion--extent of spread from primary adopters to colleagues and neighboring locations.

Chapters 3, 4 and 5 of this report examine in depth the stages of initiation and implementation and the organizational features of the NDN, respectively, as they relate to the outcomes listed above. Description and evaluation of diffusion processes and outcomes is based on evidence obtained through the Spring 1976 survey of NDN Developers, Facilitators, and adopter staff; the interview/observation site visits; program review activities; and workshop/conference documentation. Evidence from these sources is used to characterize the salient and distinctive features of NDN diffusion/adoption processes within the initiation and implementation stages and to describe the organization that emerged during the NDN's first two years of operation. Throughout the presentation and discussion of findings, we attempt to differentiate the sources of evidence as well as to evaluate the findings in terms of the overall goals of the NDN. Finally, survey data have been evaluated against an adoption outcomes criterion; that is, multiple regression techniques have been employed to identify statistically significant relationships between the adoption outcomes and participant characteristics, activities, and processes.

In Chapter 3 the various categories of activities and tactics characterizing the NDN approach during the initiation stage of the NDN diffusion process are described and evaluated. Three categories of activities make up the diffusion process occurring in the initiation stage. The first fits more conventional dissemination programs and is referred to as Initial Awareness. Through these activities, school system personnel are informed of the NDN and the programs and services it has to offer. These early awareness activities occur in two substages: (1) broad outreach designed to reveal (surface) potential adopters, and (2) focused outreach activities designed to develop interest and commitment among potential adopters.

The second category of diffusion activities in the initiation stage is described as Secondary Awareness. These secondary awareness activities include demonstrations by Developers (at their "home LEA" as well as in the field), project materials and reports, workshops, conferences, and the like. The Secondary activities differ from Initial activities in cost, size of audience served, and level of information detail. More fundamentally, however, secondary activities are generally provided to more select audiences of potential adopters: those whom the NDN change agents perceive may become actual adopters of the innovations.

The third category of initiation stage diffusion activities includes Training Sessions and Workshops conducted by Network participants and designed to prepare the intended adopter for implementation of a particular innovation. This category is less clear-cut, since not all Developers always provide training components; some Developers report they provide training only on request. Nevertheless, as will be shown, training represents a crucial component in the NDN diffusion approach in that it is a direct and personal tactic used to assist adopters in implementing an innovation in their school district.

The salient features of activities characterizing initial awareness, secondary awareness, and training are discussed in the remainder of this chapter. The chapter concludes with a brief summary of key findings.

1. Initial Awareness Activities

Initial awareness activities consist of large-scale outreach campaigns conducted by Facilitators and targeted to virtually all education agencies in their service regions. The most common tactic is blanket mailings of brief (2-3 page) fold-out brochures to everyone on address lists that Facilitators obtain from their regional or state agencies. These brochures most often contain announcements of the NDN, brief descriptions of their Facilitator operations and services, overviews of types of innovations and adoption assistance available through the NDN, and instructions for obtaining additional information.

Although many Developer projects conduct substantial outreach campaigns of their own, the NDN convention has been for Facilitator projects to initiate the process and then to coordinate follow-up with the Developer through referral procedures. The Facilitator initiated outreach campaign has the clear advantage of introducing a large number of LEAs to the range of programs and services available with a single mailing. LEA personnel can review the array of programs or program types and identify their specific areas of interest. This approach allows the Facilitator to segment the potential client groups according to the type of innovation in which they are interested, thus defining the appropriate markets for the Developers.

In the first year of NDN operations (1974-75), Facilitators experimented with a variety of outreach tactics. By the second year (1975-76), some preferences became evident (i.e., were suggested to new participants as "effective" tactics). In the discussion to follow we present brief characterizations of what appear to be the salient and influential components of the initiation process. That is, using our set of criterion measures (adoption scale, fidelity, magnitude of change, complexity, success, valuation, and secondary diffusion), we reviewed and analyzed descriptive, observational, and survey evidence to identify which, if any, aspects or tactics of the NDN initiation process were related to adoption consequences. Finally, the relative importance of all tactics are evaluated based on the results of multiple regression analyses. This provides insight into the

extent to which each identifiable tactic at each stage contributes to the adoption process.

- The initial awareness message tends to be concise and attractive.

The purpose of initial awareness is to inform school systems of the existence of the NDN, and to generate requests for further information. As such, the materials typically are designed to stimulate maximum interest for a minimum effort on the part of the reader. NDN participants either knew or soon learned that school personnel are continuously inundated with reports, questionnaires, advertisements, circulars, and busywork forms to complete. Thus, briefer and more attractive forms improved the chance of reaching the audience.

This emphasis on clarity and simplicity is strongly reflected in survey data. As Table 6 shows, Facilitators are least likely to mail out complete catalogs of NDN programs, and are more likely to send their own materials describing the NDN than to send the NDN brochure prepared by ED.

Many Facilitators employed graphic arts and media specialists to design their outreach materials. By 1975, the most popular form was a two-sided fold-out color brochure, or "flyer," containing only the essential details of the NDN purpose and programs, the Facilitator operations and services, perhaps brief reference to several types of Developer projects, and follow-up information and procedures.

- Redundant tactics are used to increase the awareness outreach.

Several different forms of redundancy in awareness outreach campaigns have become popular in the NDN. One type is repeated presentations of the same message (i.e., multiple mailings). Approximately 33% of the Facilitators report they use this tactic, even when LEAs fail to respond or show interest. A second type is the use of alternative media to present initial awareness information. Over half of the Facilitators in our site visit sample report they use print or visual media (TV spots, news articles) or make use of specialized existing communication channels (e.g., educational newsletters or publications), as adjuncts to brochures or flyers in their awareness campaigns. Facilitator staff members frequently attend state or regional meetings to make introductory-level presentations.

Table 6

TYPICAL INITIAL AWARENESS MATERIALS IN NDN OUTREACH CAMPAIGNS
AS REPORTED BY FACILITATORS

Type of Awareness Materials	Percent of Facilitators usually distributing to:		
	Administrative Staff	Instructional Staff	Parent or Community
NDN brochure prepared by the ED project	45	31	12
NDN brochure prepared by the Facilitator project	62	52	22
Letter or brochure describing the Facilitator project	75	59	19
Entire ED catalog of NDN projects	18	14	5
Selected or sample projects from the ED catalog	56	54	14
Other information about <u>most</u> or <u>all</u> D/D projects	36	35	11
Other information about <u>some</u> (selected) D/D projects	64	49	20
Other information about <u>all</u> DRP (i.e., unfunded) projects	20	17	6
Other information about selected DRP projects	46	43	14
Newsletters	51	41	16

Source: Spring 1976 Facilitator Survey

A third redundancy tactic used by Facilitators is personal follow-ups to the majority (60%) of their initial awareness mailouts. Most often this follow-up entails a telephone call, but sometimes a visit is made to the LEA. Both approaches enable the Facilitator to provide additional information, answer questions, and encourage further involvement. Follow-up visits and phone calls are more often directed to administrators (superintendents and principals) than to teachers, parent community groups, or other support categories. This pattern reflects both the relatively heavy emphasis Facilitators place on conducting effective awareness campaigns and the general Facilitator orientation of establishing personal contacts at building and district administrative levels.

• Outreach tactics are often segmented, reflecting the organizational structures of schools. Another interesting aspect of initial awareness campaigns has been the use of segmentation. Nearly all (88%) of the Facilitators in our site visit sample have developed specialized mailing lists reflecting vertical stratification of the educational community. Separate versions of the awareness information are developed for different segments, as appropriate. For example, one version in the form of a personal letter may be prepared for county and state level administrators, another version for district and central office staff, a third version for building principals, and a fourth for teachers. Some Facilitators prepare special materials for teachers associations, others for school boards, and so forth. This strategy of segmentation is obviously more costly, but it offers clear advantages in maximizing awareness and support across various levels of the education system, any one of which can generate a favorable response.

Strongly related to personal contact tactics discussed above, the overall pattern of Facilitator awareness outreach corresponds closely to the decision making structure of school systems. Nearly all (98.4%) of the Facilitators surveyed report they typically provide awareness materials to superintendents or other district-level administrators. About 90% typically include all school principals (both public and private), 73% include public school teachers, about half include central staff, and

roughly 25% include school boards, parent groups, teachers associations, community groups, or other special groups, respectively. Interestingly, nonpublic school teachers receive less emphasis than public school teachers (53% versus 74%, respectively), and school boards are also fairly low on this hierarchy. This may mean that Facilitators see these audiences as less influential, or that they are less accessible.

Several Facilitators commented that their early outreach campaigns were directed almost exclusively at district-level administrators. With experience, however, they learned the value of including other groups in their initial awareness campaigns, particularly principals and teachers, since district personnel are not always cognizant of needs and interests at the building level. The patterns of outreach emphasis displayed in Table 6 shows a clear awareness by Facilitators of conventional decision-making structure in schools, but also a clear practitioner orientation (the increasing emphasis on targeting awareness materials to teachers).

This tactic seems to represent a distinctive feature of the NDN approach. By creating awareness at multiple levels of the school bureaucracy (i.e., at decision-maker and practitioner levels), much of the resistance to change characteristic of conventional "top down" dissemination programs may be avoided. That is, current studies of the implementation process (Emrick and Peterson, 1976; Gross, et al., 1971; Williams, 1975) show that most adoptions fail when the staff who must ultimately implement the change are not allowed to participate in the decision to adopt in the first place. Interestingly, the nature of this decision participation (informative, advisory, or consensual) seems less important than its mere existence. Whether all levels actually participate in subsequent decisions to adopt an NDN program is not known from our evaluation. However, this use of segmentation tactics at least creates the potential for consensual decision making, which, in turn, may lay a better foundation for successful implementation.

- Initial outreach tends to be high-volume but specialized. The total number of school districts included in Facilitator awareness outreach during the 1975-76 school year is relatively high: 11,979 public

school districts and 8,546 nonpublic systems, as reported in the most recent survey. Yet, in this same survey, Facilitators report they typically included less than two-thirds (64%) of the districts in their state or local region in this outreach. Whether or not this incomplete outreach is intentional is not clear. Certainly an argument could be made that blanket outreach might produce a demand or response that the NDN could not meet at its current level of funding. Also, our data are not longitudinal, and it may well be that across successive years virtually all LEAs are included in NDN awareness campaigns.

Some Facilitators have, in fact, indicated they purposively restrict their awareness outreach to schools referred by their SEA and/or by Developers. Also, there is considerable evidence that many Facilitators focus their awareness campaigns on LEAs that have not previously been in the mainstream of federal assistance for educational improvement or reform. Nearly two-thirds (64%) of the Facilitators indicate they concentrate special efforts to reach these "less experienced" schools.

Facilitators have become selective regarding the type and number of NDN innovations they include in their awareness materials. Most have found that simply including a list of all Developer projects is less useful to clients than more focused descriptions. These focused materials may concentrate on the range of programs offered (with one or two thumbnail examples of each), or on a specialized list of innovations within a specific category (for example, "Basic Skills"). Occasionally, Facilitators include a page reproduced from the NDN project catalog to provide a slightly better idea of the kinds of program information their project can provide users. However, the trend has clearly been toward minimizing the detailed information provided in the initial outreach.

The clearest example of this specialization is in the types of materials sent to administrators and teachers, and the outreach methods used. As shown in Table 7, Facilitators send their own introductory brochures to superintendents significantly more often than other materials. Stated differently, superintendents are nearly always (97%) sent Facilitator brochures, but are less often sent other brochures (77%) or

Table 7

FREQUENCY (PERCENTS) OF TYPES OF INFORMATION AND METHODS OF CONTACT
PROVIDED IN FACILITATOR AWARENESS CAMPAIGNS

	Recipient Category [*]		
	Superintendent	Principal	Teacher
Type of Information			
NDN Brochures	77%	61%	41%
Facilitator Project Brochure	97%	72%	48%
Developer Project Information (Partial)	67%	55%	50%
Method of Contact			
Mail	97%	89%	73%
Telephone	59%	59%	25%
Visit	56%	53%	28%

Source: Spring 1976 Facilitator Survey

* Percent of Facilitators reporting use of materials or methods listed with each recipient group.

information (67%) prepared by Developer projects. School principals are about equally often sent Facilitator and selected Developer materials (72% and 70%, respectively). Teachers also are usually sent both types of materials (50% and 48%, respectively), but both principals and teachers are less likely to receive NDN descriptions that originate outside the Facilitator project (61% and 41%, respectively). Also both superintendents and principals are more than twice as likely to be contacted by a telephone call or site visit than are teachers. These emphases presumably reflect the Facilitators' perception of the relative values of the types of information to the different audiences.

● Outreach tactics differentially relate to adoptions. Regression analyses performed on survey data relating variation in outreach tactics (volume, segmentation, method variation, redundancy) to adoption consequences (scale, fidelity, magnitude of change, perceived implementation complexity, perceived success, valuation, and secondary diffusion), and process outcomes (LEA evaluation of NDN training, assistance, etc.) reveal interesting patterns of outreach effects. For example, the overall volume of initial outreach activities, as reported either by Facilitators or by Developers, appears independently (i.e., over and above all other characteristics of the diffusion process and adopter characteristics) to be significantly related to adoption discontinuation and to lesser amounts of secondary diffusion. Based on Developer reports, standardized regression coefficients relating outreach volume to adoption consequences (controlling for all other variables shown to significantly influence these outcome measures) were calculated to be $-.183$ for discontinuation and $-.268$ for secondary diffusion variables. Facilitator data produced an even stronger coefficient ($-.521$) on the secondary diffusion measure (i.e., the adopters' reported tendency to advocate their adopted project to other individuals).

This finding suggests to us that sheer volume of the initial outreach effort may not always be beneficial and may occasionally be detrimental, particularly if outreach is not succeeded by coordinated programs of follow-up assistance. This interpretation is based on our further assessment that large-volume outreach campaigns are typically associated with the large, more populous states (e.g., California, New York) that, coincidentally, have single Facilitators. We feel the finding probably reflects the complexities encountered in these larger, more populous states, and may be an argument for increasing Facilitator staffs or regionalizing operations in such states.

The argument for regionalization is at least partially supported by yet another finding regarding outreach effects. Specifically, the extent to which outreach programs are differentiated (and, presumably, segmented) has a significant bearing on the nature of adoptions which result. Outreach conducted on specialized bases (i.e., using referral

lists, acquaintances, regional breakdowns, and other forms of segmentation) more often results in smaller-scale (fewer buildings and classrooms) adoptions (coefficient = .297), which in turn tend more often to be successful. On the other hand, when the strategy is maximum outreach (undifferentiated lists, etc.), adoptions tend to be larger scale, less successful, and result in negative LEA ratings of Facilitator assistance (coefficient = -.327). Since these coefficients are controlled on all available significant influences, we feel they do in fact support our argument that awareness tactics may have fairly large adoption consequences. Furthermore, we interpret these findings to indicate a need for more attention by NDN participants to the appropriateness of their awareness tactics to the consequences they are attempting to attain. Perhaps more could be gained by concentrating awareness activities on more strategically selected candidate LEAs. Unfortunately, our current evaluation evidence is not sufficiently detailed or complete to resolve this issue.

2. Secondary Awareness Activities

The success of the initial awareness campaigns can be gauged in part by the volume of interest generated and requests for further information received from target school systems. Facilitators report requests for additional information from over 9,000 public school districts, and over 1,800 nonpublic schools, indicating follow-up response rates of 75% and 22%, respectively. This large (public) LEA response to initial awareness is most certainly due in large part to the use of in-person follow-up tactics described above. Also, it is likely that the use of convenient reply materials, such as postcards or other forms by which audiences can request further information, encourages a large response.

Facilitators report that replies often involve requests for specific project information materials as well as further information on the NDN. The typical response to such requests is to send further descriptions of NDN projects, often copies of pages from the NDN catalog, as appropriate to the interests and needs expressed by the LEA. Most often, the

requestor is an administrator or staff specialist; teachers seldom make direct requests of Facilitators.

During the initial awareness phase, the primary responsibility rests with the Facilitator projects. Developers occupy at most a background status. In secondary awareness, information conveyed to potential adopters becomes increasingly innovation-specific, and both change agent groups play an active role. Methods used at this stage are more intensive, colorful, personalized, and expensive than those in the initial awareness stage. Also, it is through secondary awareness that the foundations for subsequent adoption commitments are established, and all three groups--the Facilitator, the Developer, and the potential adopter first come into contact. Accordingly, we conclude that the secondary awareness component represents the first critical point in the adoption process.

As with initial awareness tactics, NDN change agents have developed and refined their secondary awareness tactics over time according to what seems effective. Although no single method appears "best," some general elements have emerged. Some of the more interesting and important of these are described below.

- Strong emphasis is placed on conferencing as an effective secondary awareness tactic. Virtually all secondary awareness strategies in the NDN require some face-to-face contact between LEA personnel and Developer staff, often arranged by the Facilitator. The most common tactic is the regional awareness conference. Developers report that over half (51%) of their awareness activities are conducted in these Facilitator-coordinated events. The awareness conference typically brings together several Developer projects to make awareness presentations to school personnel interested in learning more about the NDN programs. Facilitators generally provide the facilities and reimburse LEA representatives for travel and living costs, and Developers pay their own expenses from their Developer grants. The advantage of this conferencing tactic is that it allows relatively low-cost in-person exposure of several Developer projects and staff to a relatively large number of interested LEAs.

- Conferencing has become more specialized over time. During the first year of NDN operations, Facilitators experimented with many different techniques of conferencing. These ranged from large-scale statewide affairs with 25 or more Developer projects and several hundred LEA participants to "Flying Circuses" and conferences repeated in each region of the state. Another common tactic was the Ed Fair, in which Developers set up booths more-or-less in exhibit hall style and attempted to promote interest in their projects through attractive materials displays and other "showcasing" techniques. These elaborate methods were augmented in the second year by more focused or specialized conferences, in part because the Ed Fairs encouraged too much "window shopping" among LEAs and unnecessary competition among Developers.

Specialized conferences organized by Facilitators generally present a variety of NDN innovations dealing with a common educational issue (e.g., special education, or basic skills in reading). These functions represent an attempt to tailor awareness-level conferences to specific interests and priorities identified at the LEA and SEA levels. Facilitators typically invite selected Developers whose innovations deal with the needs and priorities expressed by LEAs in response to initial awareness campaigns. Many also coordinate SEA priorities with LEA interests in arranging such conferences. At the same time, Facilitators attempt to obtain the appropriate audiences for these specialized conferences. Invitations are frequently sent to administrators and, depending on the conference topic, to relevant resource personnel (e.g., special education staff, reading coordinators, early childhood education specialists, and the like). Given the common orientation of the Developers and their audiences, these specialized functions seem far more successful than the expensive, large-scale conferences and Ed Fairs, from both the LEA and the Developer perspectives. Both interviews and survey results show this selective approach has become increasingly popular.

- Interpersonal dynamics dominate secondary awareness proceedings. Observations show that secondary awareness conference proceedings have become quite polished and professional. Typically, each Developer is

given time to make one or more presentations. Often, multiple sessions are run concurrently and repeated, allowing audience members to meet with individual Developers in small groups for presentations, demonstrations, and informal discussions. The Developers are often assisted by their staffs, but tend to make the actual presentation themselves. Audiovisual aids are attractive, simple, and usually include samples of project materials or activities. Because these conferences are secondary awareness activities, most Developers assume the audiences are already at least interested in their innovations. However, these occasions typically represent the potential adopter's first actual contact with the details of the projects and with Developer personnel, and Developers have learned that both aspects are involved in the decision to adopt. The more effective Developers ("effective" in the sense that they generate more commitments on the part of adopters) appear to focus on the conceptual as well as the practical aspects of their innovations, and they tend to employ dynamic and enthusiastic presentation styles. As this was an unanticipated finding, we have no objective measures of these personal characteristics (indeed, short of clinical methods, such measures would be most difficult to obtain). Still, all members of our evaluation staff were uniformly impressed by what might be called "charisma" and authenticity in the Developer presentations we observed. These individuals have developed polished and effective presentations which seem at the same time personal and professional. Although no two Developers use quite the same style, they do, in our opinion, project a clear sense of expertness in their content area, practical orientation, and commitment to assisting those who may wish to adopt their projects.

With regard to conceptual aspects, Developers most often relate the fundamental rationale and core elements of their innovations in non-technical terms. They assume their audiences are familiar with the subject matter and therefore try to avoid pedantry. They also share their audience's practical orientation and devote considerable attention to the realities of the project operations (problems, costs, time requirements) and how to deal with these issues. Audiences at these

awareness conferences appear strongly attracted to this combination of expertise and a practical orientation. Significantly, our interviews revealed that most adopters recall the Developer's awareness presentation as the single most compelling experience in their decision to adopt. That is, most adopters report that the Developers' awareness presentations communicated a sense of excitement, enthusiasm, and understanding of the "real world" of the school and the classroom. This positive impression, and the sense of rapport that developed in their early encounters, were often described by LEA personnel as major reasons for their interest in adoption of the programs. It appears, then, that strong psychological components, in addition to strictly logical (rational) considerations, are involved in the adoption process.

• Secondary awareness materials provided in the NDN vary widely in depth, detail and sophistication. It would be misleading to imply that Developers' secondary awareness materials and procedures studied in this evaluation were distinct in any simple way from materials or procedures in other phases, or that much similarity existed among Developers. We obtained (through awareness conferences) and evaluated secondary awareness materials from 16 NDN Developers. Besides obvious differences among materials corresponding to innovation subject or content, clear differences were noted in the quality, depth, organization, and attractiveness of materials provided in secondary awareness activities. Some Developers do not prepare specific secondary level materials, but provide examples of actual project materials in their awareness activities. Others have prepared intermediate versions of their project materials that they provide (or sell at a reduced cost*) at awareness meetings and visits. These intermediate-level materials most often become the sole tangible source of project information for LEA staff not attending the conference or demonstration, and hence are very often instrumental in effecting decisions to adopt the innovation.

* Most Developers provide a specimen set of materials free of charge to any potential adopter and charge only for additional sets.

Our site visit interviews revealed that secondary awareness materials found most useful by LEAs exhibited the following attributes:

- (a) They are brief, clear, and attractive--generally not more than 15-20 pages in length, well-written, clearly printed (sometimes in color)--but tend to avoid the "high gloss" appearance of commercial brochures.
- (b) They are well organized and concise, and present the types of information potential adopters need to know--what the project does and who it is for, nontechnical evidence that it works, what is required in adopting it (resources, materials, cost, amount of time), what assistance is available (training and materials), and next steps to take.
- (c) Some more sophisticated secondary materials provide instructions or procedures for assessing LEA interests, needs, or project appropriateness. Steps might include polling faculty, selecting try-out staff, negotiating costs and resources, developing parent or community support, and so forth.
- (d) They are oriented to practitioner-level interests and issues. They are not advertisements as much as information packets, and may contain sample lesson plans, or sample schedules, and the like. They are mini-versions of the entire set of project materials.

The reader is cautioned that these conclusions are based on our analysis of a representative cross section of materials from 16 Developers. Because of the enormous diversity in the NDN, other materials, characteristics and configurations doubtless exist and are effective. Still, we believe these constitute the distinctive features of NDN secondary awareness materials found most useful by LEAs.

• Network participants (Facilitators and Developers) tend to differentiate both content and methods of their awareness programs. Both Developer and Facilitator staff emphasize involvement of key stakeholder groups in their secondary awareness programs. Many Developers recommend strongly that both administrative and instructional staff parti-

cipate, and they differentiate their awareness methods and materials accordingly. For example, more emphasis on budget, schedule, resource support, infusion tactics, and effectiveness issues is provided for administrators, whereas for teachers, method and content issues tend to be emphasized. Also, Developers make use of experience gained in assisting adopters to update, modify, and refine their awareness approaches. Many report that their experiences in the NDN have improved their own understanding of the essential elements^{*} of their innovations, and have enabled them to develop more effective methods of communicating these elements to others.

- A large percentage of secondary awareness activities are arranged and conducted by Developers. A frequent approach involves visits to local schools by Developer staff. Nearly half (49%) of all secondary awareness activities are arranged and conducted by Developer projects independently of Facilitators, as distinct from the cluster or regional conferences coordinated by Facilitators. However, these Developer-arranged conferences are often a consequence of Facilitator initial awareness campaigns (in which LEAs interested in particular programs are referred to Developers for further information). Less than 10% of Developer awareness activities are conducted totally independent (without the knowledge or assistance) of the Facilitator. Furthermore, conferences arranged by Developers tend to be smaller and more focused than Facilitator-sponsored sessions, often involving a single school district.

Survey results indicate that a large volume of these secondary awareness activities occur at local schools. Developers report visiting an average of 63 public and 7 nonpublic schools each. In some cases, these visits represent the first in-person meeting between the Developer and the potential adopter. More often, however, these school-based awareness activities are provided in response to district-level interest

* Those core features or irreducible aspects of the project which the Developer indicates must be included in any bona fide adoption or adaptation.

developed at a regional conference. At the district's invitation, Developers may conduct an awareness conference or workshop for all interested staff in the district. These activities overlap to some extent with training, but they are considered awareness activities since the district involved is still only considering adopting the innovation. In these instances, the visit is usually intended to confirm the LEA's interest in the program and to enhance local support for its adoption. Although such activities are relatively expensive, Developers consider them useful for developing a base of local support since they provide direct access to key decision makers and enable a representative sample of the district staff to become informed firsthand.

● The NDN supports visits to Developer sites by potential adopters. Another technique frequently used as part of secondary awareness involves visits by interested LEA staff to Developer sites to observe firsthand the relevant aspects of the innovation. In our survey, Developers report that over 4,000 school districts (4,212 public and 192 nonpublic) have sent representatives to their sites to attend a demonstration of their project. Typically, expenses for this visit are shared by the potential adopter and the Facilitator project, with the Facilitator paying travel and subsistence, and the school purchasing release time for the visiting staff. Because of expenses and possibilities for abuse, most Facilitators restrict their support of these visits to one, or at most two Developer sites per LEA. Also, travel support by Facilitators is generally restricted to those key staff (administrators and/or teachers) identified by Developers as appropriate for these visits.

Our observations show that the format for demonstration visits varies across Developers. Some are informal, emphasizing classroom visits and conversations with project staff. Others use more structured approaches, involving presentations on key program components in addition to observation and discussions, in an attempt to provide visitors with a comprehensive view of the program. Although most Developers permit visitors whenever their program is operating, several encourage interested LEA representatives to attend regularly scheduled "visitors' days" to observe the program and meet with the staff.

The function of these visits to Developer sites has been a source of debate in the NDN. Most agree--Facilitators, Developers, and adopters alike--that the visit is a valuable, if not essential element in adoption success. However, disagreement exists as to when such visits should be made, what staff should be involved, and how often such visits should be made.

Some Facilitators and Developers feel that visits to the Developer site should serve awareness or "showcasing" functions--providing LEAs a better basis for their decision to adopt. Others argue that such visits should serve more of a training function, and will be more valuable to LEAs after they have attempted implementation and are more familiar with the project. Still others take an intermediate position, arguing that the Developer's demonstration site functions as an implementation model for those LEAs who have made commitments to adopt.

With few exceptions, the above differences in orientation toward visits to demonstration sites do not relate to innovation types. Nor do we find strong evidence of a relationship to adoption consequences. Rather, what seems more important, is whether a visit occurs at some point in the adoption process, and who is included in the visit. Innovations involving relatively complex organizational or instructional changes often require that both teacher and administrative representatives--preferably opinion leaders--visit the demonstration site. Still, it does not appear necessary for all potentially affected personnel to participate. We share the opinion of most Facilitators and Developers that these visits provide an effective means for early involvement of opinion leaders from the administrative and instructional ranks, who can pass on their interest and enthusiasm to other LEA personnel, and therefore are important.

Both LEA visits to Developer sites and Developer visits to individual LEAs represent a sizable investment of resources, in terms of staff time as well as dollars. Many NDN participants have come to encourage such preadoption visits primarily to confirm LEA interest in a specific program. The Facilitator-coordinated awareness conferences described earlier represent a more efficient use of resources for generating interest, since they provide LEAs with a fairly intensive exposure to

several programs at once. Thus, most visits involving a single LEA and a single Developer are undertaken only after the LEA has made at least a tentative decision to adopt the Developer's program. According to our LEA interviews, such visits serve to confirm the decision and to secure early support from important stakeholder groups within the adopting location.

• Besides coordinating and facilitating awareness, Facilitators serve screening and gatekeeping functions. Facilitators must at the same time generate interest in NDN programs and perform screening and gatekeeping functions to coordinate interested schools with appropriate and available Developers. This balancing act requires some knowledge by Facilitators of the Developer's innovation, requirements, and emphasis, of Developer activity schedules and availability, and some assessment of the compatibility and appropriateness of the project to the LEA characteristics and interests. In short, as their title implies, Facilitators act to some extent as brokers, employing their own individual matching algorithms to connect interested LEAs with the "right" NDN projects.

Our case studies showed that for some Facilitators, the algorithm is crude and undifferentiated: for example, "First come-first served" or direct referral to Developers through the NDN catalog. For others, this algorithm is relatively refined and sophisticated, and may involve components such as "negotiating the questions" (i.e., exploring with interested LEAs which of a range of possible innovations--if any--might be best suited to their interest and priorities), "counseling out" (i.e., suggesting to an LEA they are not yet ready to undertake an NDN adoption), and various other forms of "processing." One Facilitator project reported that rarely do LEAs correctly identify their most appropriate needs, and that it is the responsibility of the Facilitator to "process" these potential adopters so as to find the most suitable Developer project, if any. At the level of the LEAs, then, these services act to clarify interests, priorities, and project suitability to LEA needs, and ultimately will increase the likelihood of useful and successful adoptions.

At the NDN level, these screening (identifying "true" LEA interests) and gatekeeping (coordinating and linking LEAs to appropriate and available Developers) functions of Facilitators are fundamental to coordinate the NDN approach of networking. First, the resource pool (Developer projects) is limited both in numbers and types of programs available to interested schools. Facilitators can regulate (restrict and direct) the LEA flow based on availability and appropriateness. Second, Facilitators do not necessarily represent a project bias. Rather, the Facilitator is a process advocate and is in an excellent position to make "unbiased" referrals. Third, Facilitators have more direct access to administrative authority than do Developers and often can more readily diagnose an LEA's prospects and readiness for adoption.

Survey evidence indicates that the involvement of Facilitators in these screening and gatekeeping roles represents only part of their activities. Roughly 50% of the Developer awareness activities are coordinated closely with Facilitators, which corresponds fairly closely with information developed through interviews. This may indicate an area of Facilitator activity which needs to be strengthened. On the other hand, the survey of adopters indicates that less than half perform systematic needs assessments (i.e., poll the faculty, survey parents or community, or analyze student test scores) and that if anything, they are most likely to simply review "problems facing the district" in determining their needs or interests in NDN programs. Consequently, potential adopter schools could use assistance in clarifying their interests and priorities--assistance the Facilitator projects appear to be in an ideal position to provide.

- Facilitators also serve a catalyst function by providing financial support for LEA/Developer contacts. Related to, yet distinct from, the Facilitator's gatekeeper role during secondary awareness is the catalyst function. An example of this role is the financial assistance that Facilitators provide to LEAs. Most Facilitators reimburse LEAs for expenses associated with attendance at awareness conferences and visits to demonstration sites. We term such assistance a "catalyst" since it serves primarily in an enabling capacity. That is,

it allows activities to occur that might not otherwise take place (e.g., LEA visits to Developer sites), but it does not directly influence the content of these activities.

Because of current financial pressures on most school systems, LEA funds to support staff travel (particularly across state lines) are typically limited or nonexistent. (Even some NDN Developers had to obtain special permission from their LEAs to use federal grant funds for travel out of state.) Without special financial assistance, many LEA personnel would find travel to conferences or demonstration sites extremely difficult, if not impossible.

Most Facilitators attempt to screen out "window shoppers" or opportunists and look for evidence of interest in adopting an NDN innovation before providing financial aid. LEAs are usually required to submit a written request for financial assistance, and only actual expenses are reimbursed. Some Facilitators expect the LEA to cover a portion of travel and subsistence costs; other reimburse travel costs fully but expect the LEA to provide release time for their staff. Usually the superintendent's signature on the request is required as an indication that the district-level administration is cognizant of the activities under way and is interested in pursuing the possibility of adoption further.

Given the apparent value of early face-to-face contact between LEA personnel and Developers, the availability of financial support for secondary awareness activities requiring LEA staff travel becomes important. In their role as linkage agent or process advocate, Facilitators are in an appropriate position to provide this support in a coordinated, efficient manner with a minimum of red tape. Still, provision of this service entails substantial cost, one that most SEAs contacted in our evaluation do not yet appear ready to assume. Since we evaluate the Facilitator component positively and as a necessary ingredient of the NDN approach, we have provided several recommendations for increasing SEA support to Facilitators in Chapter 6 of this report.

● Secondary awareness, although more focused than initial awareness, still tends to be high volume. Our survey shows the proportion of "single" Developer awareness conferences has declined over the past two years (47% to 33%), whereas the proportions of specialized (several similar projects) and general (several diverse clusters of projects) sessions have slightly increased (20% to 25% and 34% to 42%, respectively). We interpret this to indicate that the amount of Facilitator-Developer coordination, or "networking," has been increasing over time. Also, the total amount of secondary awareness activities has sharply increased, from 533 reported sessions in 1974-75 to 761 sessions during the 1975-76 year. More impressive, however, is the overall exposure the NDN has provided to school districts in terms of secondary-level awareness of the NDN innovations. Based on the combined Facilitator and Developer reports, over 9,000 public school districts have been provided secondary awareness information, for, on the average, 10 Developer projects each. Similarly, over 1,800 nonpublic schools have received secondary awareness for, on the average, 4 projects each.

- An in-person component at the awareness stage appears crucial.

All of the preceding interpretations of effective NDN awareness tactics are supported by the results of multiple regression analyses performed on evaluation variables created from the 1976 Developer survey. Specifically, relationships of variations in secondary awareness characteristics, such as Facilitator/Developer coordination, use of demonstration conferences, adopter visits to Developer sites, and variations in content and method of awareness presentations (i.e., adaptation to LEA interests) to adoption outcomes were examined in conjunction with all other process indicators to determine their significance in the adoption process. The results of these analyses are shown in Table 8 in the form of standardized regression coefficients for each component shown to be significant.

*The regression analyses used a stepwise feature such that only independent variables significant at $p < .05$ are included as predictors.

Table 8a

SECONDARY AWARENESS COMPONENTS THAT SIGNIFICANTLY INFLUENCE ADOPTION OUTCOME INDICATORS

Awareness Component or Characteristic	Standardized Regression* Coefficient	Adoption Characteristic or Outcomes Influenced
● Facilitator-Developer coordination (as reported by SF)	-.403	Scale (number of classrooms and schools) of the adoption
● "	.216	Adoption status (continuation of full adoption of LEA)
● Facilitator-Developer coordination (as reported by DD)	.284	Complexity (number of administrators and teachers) of adoption
● Adaptation of awareness component contents (as reported by SF)	.399	Adoption fidelity (low degree of modification of methods or procedures by LEA)
● Conferencing (the range and extent of awareness conferences reported by SF)	-.253	Adopter satisfaction with adopted project
● Participation in conferences (number and types as reported by SF)	-.113	Complexity of adoption
● Adaptation of awareness component contents (as reported by DD)	.468	Likelihood LEA will advocate adopted project to others (secondary diffusion)
● Conferencing: Number and types sponsored (as reported by SF)	.230	"

* Coefficients obtained from stepwise regression on all available predictor variables. All coefficients significant ($\beta \neq 0$) at $p < .05$.

Source: Spring 1976 Survey

Table 8b

SECONDARY AWARENESS COMPONENTS THAT SIGNIFICANTLY INFLUENCE ADOPTION PROCESS INDICATORS

Awareness Component or Characteristic	Standardized Regression Coefficient	LEA Adoption Processes Influenced
• Adaptation of awareness component contents (as reported by SF)	.208	LEA positive evaluation of NDN assistance (either Developer or Facilitator)
"	.240	LEA positive evaluation of Facilitator assistance
• The use of standard follow-up or "return-response" forms by SF	.340	LEA positive evaluation of Facilitator assistance

76

87

88

Most of the variations in awareness methods are associated with relatively small-scale adoptions (i.e., adoptions involving only a few classrooms, grade levels, or schools). Presumably, this reflects an adaptive style of these Developers, wherein they match methods and techniques to local issues and interests as appropriate.

Conferencing or in-person awareness methods significantly relate to complex adoptions involving adaptations. Conversely, Developers who rely on materials (as opposed to in-person methods) to create awareness generally have poor adoption consequences such as greater implementation problems, decreased adopter satisfaction with external assistance, and less actual or apparent change. This corresponds with our central thesis that adopters respond primarily to the interpersonal dynamics encountered in the awareness (and training) stages. Apparently, then, Developers who attempt to communicate this enthusiasm through materials are far less successful than those who provide it in person.

Conclusion. We conclude that secondary awareness components of the NDN represent one of the more distinctive and generally effective features of the NDN diffusion approach. The potency of in-person tactics becomes evident in the strong sense of enthusiasm created at conferences and demonstrations, and this enthusiasm becomes the élan vital to effect adoptions. The presence of a collection of practitioner-type Developers with real programs and practices (rather than abstract theories or philosophies) also seems to be a crucial ingredient.

3. Training Activities

This third category of activities characterizing the initiation stage--training--is actually fairly broad and complex. This evaluation distinguishes between two types of training: prestart-up training, by which NDN agents prepare adopting staff to undertake implementation of the innovation in their school, and implementation assistance, which takes more of an "in-servicing" form and occurs during the implementation stage (described in Chapter 4).

As with many of the components in the NDN approach, most training is provided on an in-person basis. Accordingly, it is relatively expensive and is limited to the availability of training staff. Still, survey results indicate that NDN training sessions served many school districts. According to Developers, training sessions have been provided to more than 5,000 school systems (4,909 public and 437 nonpublic); the majority of these session (3,724) entailed coordination or other assistance from a Facilitator project. Responses to the survey questions dealing with particulars of these training activities, coupled with observation and interview evidence, indicate that the following are the important characteristics and effects of NDN adoption training.

- Training activities are generally coordinated by Facilitators but are conducted by Developer staff. In training, as in awareness activities, NDN Facilitators see their role as that of linking agent and coordinator rather than program specialist or technical expert. Accordingly, Facilitators nearly always send a staff member to training sessions held within their state or region. However, they generally prefer not to conduct actual training sessions, as this is the function of the Developer and is somewhat inconsistent with the Facilitator role (as described in Chapter 2). Instead, the Facilitator's involvement in training primarily includes securing facilities, coordinating schedules, making sure the appropriate LEA staff will attend, assisting the LEA with travel and subsistence expenses, and providing other logistical support.

The importance of the Facilitator's coordination/support function is acknowledged by the majority of Developers, 79% of whom require or recommend contact with a Facilitator before accepting an LEA for training. Somewhat fewer (62%) of the Facilitators consider prior contact between the LEA and the Developer an important prerequisite for training. Presumably, some Facilitators feel that Developers' materials and information conveyed through the Facilitator are sufficient during the awareness stage, and that actual contact between the Developer and the potential adopter need not occur prior to training.

• Some specialized training is nearly always provided to NDN adopters. Virtually all the adopters surveyed indicated they received some form of training for implementing their adopted innovation. In 90% of the cases, some training was provided prior to actual start-up or implementation of their project, and 64% of the adopters report they received additional training after they began implementation. Typically, prestart-up training required 16 to 24 hours and almost always (94%) was provided by Developer project staff. Postimplementation training tends to be much briefer, averaging 8 hours or less. Although NDN agents provide the majority of this training, almost half (48%) of the adopters reporting postimplementation training received some training from local sources.

An "average" LEA complement receiving prestart-up training included two or three administrative staff members (most often principals, but occasionally a superintendent or assistant superintendent); possibly a central staff specialist (e.g., a resource teacher); ten teachers (although the number of teachers trained varied enormously across Developers and adopters, ranging from none or just a few to several hundred); and occasionally some paraprofessionals, parents, or other noninstructional personnel, depending on the nature of the innovation. The average number of LEA personnel involved in this training was 18. Given the wide variation in the number of teachers involved, this average is not particularly representative. For example, almost one-half of the adopters had three or fewer teachers involved in training, and in only 20% of the adopter LEAs were more than ten teachers trained. This suggests the typical training session was quite small and focused, involving probably not more than five LEA staff.

Training sessions conducted at the Developer's home site frequently drew only some of the adopter staff members expected to implement the new program. In these cases, the cadre of trained personnel generally provided training for other staff upon returning to their districts.

The poststart-up training, although briefer, typically involved about the same number of LEA staff as did prestart-up activities. How-

ever, the target audience of these poststart-up sessions changed markedly, including instructional staff almost exclusively. In a sense, the pre-start-up training was conducted as "preservicing" or "orientation" activities, whereas the poststart-up training appears more like conventional "in-service" activities.

Our Developer survey indicates that the relative length of training activities also varied by program types and in accord with LEA needs (as perceived by the trainers). However, many Developers and Facilitators report that training activities have been streamlined so as to shorten their duration. The average session lasted 2 or 3 days; few were more than a week long.

Interviews with Developers reveal that several experimented with "internship" training programs in which LEA personnel remained at the Developer site for periods of a month or more. This approach was largely discontinued, however, as it posed several problems. First, the demonstration sites can typically accommodate only a modest number of interns. Second, the costs of supporting extended internships (release time and subsistence) are high. Third, trainees expressed marked impatience to return home. Basically, LEAs prefer that their staff remain absent from their regular duties for no longer than about a week. Also, trainees usually prefer to begin using the new methods and materials in their own schools and classrooms.

Developer interviews showed they have also learned that training is often more effective when it is distributed over multiple sessions, even though this tactic is more expensive than a single, comprehensive workshop. Thus, Developers with particularly complex programs tend to focus during prestart-up sessions on those aspects necessary to begin implementation; they follow up later with additional elements and refinements. This distributed tactic helps to minimize the "information overload" and fatigue that frequently characterizes the final days of extended training sessions. This approach seems to help LEA staff assimilate the essential features of the innovation more completely, maintains higher overall interest and attentiveness, allows LEA staff to identify specific problem areas and resolve problems or ambiguities

with the trainers on an in-service basis, and seems to lead to a better overall infusion and implementation of the adoption.

- Developers differ regarding when and where training should be provided. Part of the variation in the extent to which Facilitators are involved in NDN training activities is related to the location and timing of training. Developers whose programs typically entail a large number of staff usually prefer to conduct training sessions at the adopting location. In cases where several districts within a single state or region plan to adopt the same program, training is often held in a central location. Facilitators usually send a staff member to training sessions conducted within their state or region.

However, for small-scale adoptions requiring training for only a handful of LEA staff, most Developers prefer to train in their home LEA. This allows the Developer to include teachers and other demonstration site personnel in the training and to reach multiple LEAs in a single session. Developers report that attendance of Facilitator staff at Developer-site-based training is fairly rare. However, Facilitators may still serve some of the coordination and support functions described earlier. For example, they frequently provide funds for LEA travel to the training location and/or assist the LEA in securing release time for trainees. Interviews with Facilitator and Developer staff participating in a number of adoptions revealed that Developers are often unaware of many of the administrative and logistics support activities of Facilitators; likewise, Facilitators are often unaware of the materials and procedural details used by these Developers. This incomplete information is probably consistent with what each participant group needs to know about the other's respective activities, but leads to underestimates of the actual synchrony taking place.

Another variation in training is when training actually is provided in the adoption sequence of events. Most Developers report they prefer to train adopter staff prior to the start of implementation. Several Developer projects, however, reason that training will be most effective after an adopter has had an opportunity to try out the project for awhile, becoming more familiar with materials and the like. A few

Developers report that this "familiarization" stage may be as much as a full year. In these late-trained adoptions, the involvement of Facilitator staff is at a minimum, or completely absent--the LEA is interacting almost exclusively with the Developer staff. Developers spend their own funds to arrange and conduct training, and seldom do more than notify Facilitator projects of these events. In such adoptions, the Facilitator has initiated the process, but the Developer assumes almost total responsibility for effecting the adoption. Still, these cases do not seem typical of the NDN strategy, and may make up at most 30% of the total effort.

- NDN training activities are becoming relatively standard in method and content emphasis. There is considerable evidence (survey and case study) that many aspects of the NDN strategy are becoming reasonably uniform and stylized based on experience over time. This trend is most clearly reflected in the content and method aspects of training activities. As stated above, training is provided by Developer staff, most often before, but occasionally after, the start of implementation; it tends to be coordinated with (but usually does not directly involve) Facilitators, and has recently become briefer and more focused on instructional staff. Of all the diffusion tactics used by Developers, training appears the most uniform and standard in terms of method and content emphasis. We interpret this uniformity to reflect the practitioner orientation characterizing virtually all Developer staffs.

With respect to content of the training programs, virtually all Developers emphasize the goals and philosophy embodied in the particular innovation. They focus on the "spirit" of the "essential features" of the innovation, its raison d'être. Our observations of several training sessions suggest that much of the energy and enthusiasm necessary to carry out the implementation relates to the heavy emphasis that trainers place on this component.

For example, a particularly effective language arts project devotes the early portion of the training session to showing examples of "unheard of" accomplishments from normal children (complete books by first and second graders, original plays by fifth graders, highly imaginative

and expressive essays and compositions across all grade levels), obtained through this project. The main theme of this training is to disabuse the participants of limiting stereotypes or expectations and to effect a conceptual and philosophical shift from grammatical formalism (spelling, punctuation, etc.) to communication and expression as the core of language arts instruction. As the Developer argues, "Spelling is not a moral issue."

The second most heavily emphasized content area pertains to the use of materials provided by Developers and procedures for initiating and implementing the project. These are practical presentations dealing with the step-by-step specifics often worked out in detail in the materials. Trainers usually make a special point of linking the new project to current practices, showing where differences exist and how to change over. Again, the emphasis is more in terms of the spirit or philosophy of the project, as opposed to form or structure. For example, a sequence of steps for implementing a project will be suggested by the Developer, but may be revised or even reversed to meet special concerns of adopters. Some Developers have completely revised their training materials to provide alternative scenarios based on cumulative adopter experiences. Whether a Saturday School meets on Saturday is considered less important than having some meeting time. Whether the lesson plan provided in a set of project materials is followed literally or used as a sample guide is considered less important than having some plan that reflects the project's underlying philosophy. Whether to use diagnostic/prescriptive techniques in conjunction with new materials or familiar ones is considered less important than focusing on the philosophy of individualization (diagnosis/prescription). In short, the trend among trainers has been to lessen emphasis on point-for-point replication. Most trainers encourage reasonable adaptations that preserve the integrity or core elements of the innovation.

A third and somewhat less heavily emphasized content area pertains to implementation problem areas and methods by which adopters can formatively evaluate the innovation. More experienced trainers can relate typical problems new adopters are likely to encounter. In general,

the message is to understand the fundamental goal of the new practice and to identify an appropriate course of action or modification that will retain this core. Some Developers point out that any modification in response to problems of implementation is acceptable, but that only if the implementation represents a strong and faithful copy of the original (with respect to core elements) will comparable results or effects be forthcoming.

The least emphasized component of Developer training regards project housekeeping, administrative tasks, record keeping, and the like. Developers view red tape as anathema to successful implementation. They deal with the trainees as competent professionals interested in learning new and more effective methods of instruction. Accordingly, trainers emphasize administrative components only if they are central to the innovation (which they seldom are).

Survey evidence gathered from Developers and adopters shows striking correspondence regarding content. As summarized in Table 9, the relative emphasis given to various training topics was well perceived by the trainees, indicating that activities were purposively and clearly differentiated.

Table 9

PRESTART-UP TRAINING CONTENT

Content Area	As reported* by:	
	Developers	Adopters
Project goals and philosophy	99%	96%
Project materials and procedures	92%	89%
Problem area and evaluation methods	76%	74%
Project administration (housekeeping)	56%	64%

* Percent "always included" by Developers, and percent "included" by adopters.

Similar evidence of differentiated emphasis on training methods has been summarized in Table 10, showing trainers prefer conversational modes and group discussion methods over more formal or technical procedures. This corresponds to our observations of a number of training activities, but fails to reveal the personal force or sense of enthusiasm observed to be characteristic of the trainers. The sessions were fairly

Table 10

PRESTART-UP TRAINING METHODS

Method	As reported* by	
	Developers	Adopters
Presentations and group discussions	88%	88%
Question and answer sessions	99%	89%
Demonstrations and use of A-V materials	81%	78%
Role playing, games, or actual "Hands On" experience	73%	58%

* Percent "always" included by Developers, and percent "included" by adopters.

fast-paced and well-coordinated, but not overly structured or formal. Trainers were effective in stimulating participation by the trainees, encouraged questions and provided very practical "how to" and "when" responses, and generally intermixed films, slide shows, or other A/V presentations throughout their sessions. They usually "walked" the trainees through the materials, again emphasizing "practical" (as opposed to formal) mastery. A few trainers have developed fairly representative arrays of "don'ts" as well as "do's," hence maximizing conceptual learning of the trainees.

Where feasible, a training session may involve role playing, simulations, or other forms of "hands on" experience. One somewhat unusual project that deals with a complex district-level innovation supplies an elaborate month-long training program with the key specialists implementing the innovation. Part of this training is conducted in-person, but the majority is provided over the telephone and through computer terminals.

In general, then, the majority of NDN training activities emphasize the fundamental conceptual and practical aspects of the innovations, including how to phase in the project, how to use the materials, and how to adapt to local conditions. The majority of the "technology" per se is represented in the project materials.

• Facilitators and Developers generally agree on LEA prerequisites for training. The NDN survey shows that nine out of ten Facilitators and Developers view LEA predisposition toward the innovation philosophy as the most important single requisite to training. Presumably this understanding or familiarity is effected through earlier awareness activities, yet surprisingly few Facilitators (11%) or Developers (21%) see actual attendance at a project demonstration as an essential prerequisite. Rather, their second and third priorities are that the LEA identify the local "team" that will implement the project in the adopting location (86%) and that the potential adopters exhibit some reasonable commitment to implement the project once they have been trained (80%). An important member of the local team is the Primary Contact, who serves as local liaison between the Developer and the adopting staff. The adopter survey indicates that most often this Primary Contact is a member of the administrative or central staff, such as a building principal, curriculum coordinator, instructional supervisor, or resource teacher. Occasionally a classroom teacher serves as Primary Contact, particularly in departmentalized schools (junior and senior high schools). It is up to the Primary Contact and other persons involved in awareness activities to communicate the "flavor" of the innovation to relevant LEA staff, to develop a sense of interest and commitment,

and to promote the availability of key personnel to receive training. This underscores the usefulness of the frequent Developer requirement that both administrative and instructional staff attend secondary awareness events.

- Demand for NDN services exceeds current capacity. Reports from Facilitator and Developer projects indicate that many school-level personnel have been provided training and other direct assistance in the adoption of NDN innovations. Facilitators report that more than 35,000 individuals have received training facilitated by their staffs, and Developers report training more than 62,000 individuals. Since the proportions of individuals trained by types are reasonably similar for Facilitator and Developer reports, we assume the difference in totals reflects the tendency of some Developers not to coordinate training with Facilitators. Still, Developers report they have had to deny assistance to nearly 700 eligible LEAs primarily because of limitations on staff or funds, or because of scheduling problems.

In anticipation of this problem, USOE encouraged experimentation with a "turnkey"* concept by which some staff among Facilitator projects could become trainers for high-demand Developer projects. A moderate amount of this "turnkey" or Facilitator-trainer activity was attempted, with relatively discouraging results. According to our Facilitator survey, about 100 individuals received some form of "turnkey" training from Developers. Yet this collection of turnkeys claims to have effected actual training with only 69 LEAs.

- Adoption agreements are used widely to select LEAs for training. The "sellers markets" situation described above raises several interesting problems, such as how Developers select LEAs to receive training and other assistance. Many Developers use a quasi-contract device, referred to as an "adoption agreement," as a screening or selection mechanism.

*The NDN uses a modified definition of "turnkey," in which Developers train Facilitator staff, who in turn can train LEA personnel. USOE, in fact, operates under a broader concept of "turnkey" such that an adopter can be viewed as a turnkey trainer.

Although some Facilitators prefer to negotiate adoption agreements at earlier stages (i.e., prior to supporting an LEA visit to a Developer site), more often they work with Developers in setting terms of these agreements at or before training. Typically, the terms of these agreements specify Developer assistance to be provided, logistical and financial support to be supplied by the Facilitator, LEA staff and resources to be committed to the adoption effort, and schedule and milestones. Most often, Developers specify the terms of these agreements that, although not legally binding, make the mutual commitments visible and explicit. Those LEAs not willing to negotiate an adoption agreement often are considered suspect with regard to motives, and may be passed over for other more clearly committed LEAs.

According to the Developer survey, about 75% of the NDN Developers report they routinely use adoption agreement as part of their dissemination strategy. Other Developers tend to use a "first come-first served" basis for selecting among LEAs. Yet, since Developers claim that approximately two-thirds of LEAs trained actually proceed to implement their programs, even those who do not use formal adoption agreements in their training programs still exercise care to avoid high-risk LEAs. Our interviews suggest these Developers rely on subtle clues from their interactions with LEAs in arranging training, and advice from Facilitators, who are often in a good position to assess administrative commitments and organizational readiness for the adoption. Few Developers will deny training to an LEA supported by a Facilitator unless their training schedules are already fully booked.

As process advocates, Facilitators stress the need for Developers to minimize paperwork and to avoid administrative red tape with LEA trainees. One area that has been streamlined is the adoption agreement. Although both Facilitators and Developers see the need for explicit commitments by LEAs (they are both investing time, effort, and money in the activity), they have learned that premature commitments are of little value and have evolved "one-step-at-a-time" techniques for phasing in LEAs to more formal commitments. Thus, an agreement negotiated prior to training may not "commit" an LEA to full-scale

implementation. Rather it may define the particulars of the training (e.g., date and location, LEA staff to attend, financial arrangements) and signify that the staff trained will make every effort to master and to pass on this new information to other staff (since seldom are entire staffs provided training).

- LEA staff respond very favorably to NDN training. Further evidence of the viability and effectiveness of NDN procedures is provided in the LEA evaluations of training and assistance received. Based on our adopter survey, nearly two-thirds of the LEAs felt the training they received has prepared their staff thoroughly for implementing the project, whereas only 7% found the training seriously deficient. Very few Facilitators and Developers (about 2%) identified trainee dissatisfaction as a recurring problem. Two recurring problem areas identified by both Facilitators and Developers were in scheduling training to correspond to LEA availability, and in obtaining release time for the relevant LEA staff to attend training. Yet even these areas were perceived as serious problems by less than 20% of the Facilitators and Developers.

- Training tactics have strong adoption consequences. As indicated above, most LEAs have found the training provided through the NDN an effective preparation for implementing their chosen programs. Evidence of the influence of variations in training (e.g., variations in content, method, materials, length, number of people trained, number of sessions, use of turnkeys, pretraining requirements) on adoption consequences was further analyzed through regression analyses of survey data. The results of these analyses suggest a number of interesting relationships between aspects of training and a variety of adoption characteristics, as summarized in Table 11. For example, training programs that are coordinated with Facilitator operations, that are more focused and specialized (i.e., less comprehensive or overwhelming), and that are more personalized in character (i.e., more emphasis on interpersonal methods, less on materials) are more likely to lead to successful adoption. On the other hand, formalized or "routinized" training appears least successful, most often leads to nonadoption or to implementation problems and sub-

Table 11a

TRAINING COMPONENTS THAT SIGNIFICANTLY INFLUENCE ADOPTION OUTCOME INDICATORS

Training Component or Characteristic	Standardized Regression Coefficient	Adoption Characteristic or Outcome Influenced
● Coordination of Developer with Facilitator in training (as reported by Facilitator)	.303	Level of resulting adoptions (number of classrooms and schools)
"	.301	Successful implementation (LEA perception)
● Number of training sessions, persons trained, and districts involved (as reported by Facilitator)	-.425	Scope of resulting adoptions
"	-.303	Magnitude of changed involved in adoptions
"	.228	LEA subjective evaluation of adopted project
● Range of training topics and procedures; duration of training (as reported by Developer)	-.533	Implementation problems experienced by adopters
● Formality of Developer's pre-training requirements and materials	.294	Implementation problems experienced by adopters
"	.329	Likelihood adoption will be discontinued
● Variability of training procedures and content	-.235	LEA subjective evaluation of adopted project
● Adoption agreement imposed by Facilitator or Developer	-.205	Actual adoption by LEA
	-.253	Scope of resulting adoptions

Source: Spring 1976 Survey

Table 11b

TRAINING COMPONENTS THAT SIGNIFICANTLY INFLUENCE ADOPTION PROCESS INDICATORS

Training Component or Characteristic	Standardized Regression Coefficient	Adoption Process Influenced
● Range of training topics and procedures; duration of training (as reported by Developer)	.274	LEA positive evaluation of DD project materials
● Formality of Developer's pre-training requirements and materials	-.227	LEA evaluation of Facilitator
"	-.229	LEA evaluation of prestart-up training received
● Variability of training procedures and content	-.235	LEA subjective evaluation of adopted project

Source: Spring 1976 Survey

sequent discontinuation, and tends to be negatively evaluated by LEA staff.

These findings are consistent with our previous discussions regarding the importance of person-intensive training methods in driving the adoption process. The mosaic of training factors that affect adoptions strongly indicates that as training becomes more mechanical or technology-oriented, the quality and viability of subsequent adoptions diminishes. Even taking complexity of adoptions into account, the pattern still holds: namely, focused person-intensive training coordinated by Facilitator projects but administered by Developer staff produces more complete and successful adoptions of relatively complex innovations, whereas mechanical or formal training approaches seem less successful even for relatively noncomplex innovations (recall that complexity is defined primarily in terms of the number of staff and resources required to implement the innovation). Even regarding adoption agreements, if the approach is overly rigorous and does not appear personalized, it is less successful, (i.e., negatively related to adoption status, or/and continuation).

Another interesting characteristic of training which has strong adoption consequences regards the relative volume of LEAs trained. As the findings in Table 11 show, Facilitators and Developers who manage large volume training activities (i.e., train large numbers of LEAs) typically generate adoptions which are smaller in terms of the scope (number of innovation elements adopted) and the magnitude of change, as reported by LEAs. Still, these "less significant" adoptions are positively valued by the LEAs. A likely interpretation, one which corresponds with our site visit observations, is that these high volume training activities involve relatively uncomplicated innovations which are currently attractive to LEAs and which may easily be adopted in part or in stages (e.g., ecology curricula).

On the other hand, our data indicate high volume training would be less effective for complex innovations involving large amounts of change and considerable time and effort for implementation. For these adoptions,

Developers who restrict their training to fewer LEAs (and presumably conduct more thorough training with each) tend to effect better adoptions, are more positively evaluated by the LEAs, and have stronger secondary diffusion consequences.

The implications of these findings seem to be that training represents a critical point in the adoption process--one that tends to establish the momentum necessary to carry out a successful implementation of the innovation. The focus of training, therefore, must be on creating the enthusiasm and motivation necessary to carry through the implementation, as well as developing the essential substantive or content understanding associated with the innovation. Successful NDN training procedures are more than simply skill training programs; they entail forceful seminars on conceptual issues and extended "how to" dialogues. Clearly, these training goals are not readily attained through materials alone, regardless of the sophistication of the materials. What is not clear is the extent to which successful training is dependent on the personal style of the trainer, or to what extent the trainer's effectiveness can be enhanced by well-prepared training materials.

Another implication of the above findings relates to the volume of LEAs that can be effectively trained by a given collection of Developers within a given time period (e.g., a year). Available evidence suggests more favorable results occur when quantity is deemphasized and quality is stressed. But because of the great variation in innovation specifics and adopter characteristics, it is unrealistic to specify this volume in any absolute way. Generally, we have found that the training of trainers is of limited value, since such "turnkey" trainers usually lack the depth of experience with the innovation as manifest among Developers. It is this depth of experience, coupled with their enthusiastic style, that sets the Developers apart as genuine experts, and that seems to be the source of credibility for the innovation and the motivation for its implementation.

4. Summary of the Initiation Stage

The initiation stage of the NDN diffusion/adoption process includes activities intended to inform LEAs of the innovations available for adoption, to build local interest in adoption of one or more programs, and to prepare LEA personnel to begin actual use (implementation) of the programs they have selected. Initiation activities occur within three substages: initial awareness, secondary awareness, and training.

In line with their role as linkage agent between LEAs and the NDN resource base, Facilitators have assumed major responsibility for conducting initial awareness or outreach campaigns. Tactics that characterize effective campaigns include the following:

- Materials whose messages are concise and attractive, generally including an overview of programs and services available to LEAs. Initial awareness brochures are designed to stimulate interest with a minimum effort on the part of the reader.
- Use of redundant tactics, including repeat mailings, use of print and visual media, and personal follow-up to initial mailings (through telephone calls and visits).
- Segmentation of the audience corresponding to the organizational structure of school systems. Activities are directed to multiple audiences within the educational community (e.g., superintendents, district staff, principals, teachers, community groups).
- Use of high-volume but specialized approaches, in which both the message and the methods used are tailored to the interests and orientation of the particular target audience.

In secondary awareness, information becomes more detailed and innovation-specific, and methods are more intensive and personalized. Both Facilitators and Developers play an active role in these efforts. It is during the secondary awareness substage that most LEAs make at least a tentative decision to adopt a specific NDN program. Various methods have been used to match LEAs with Developers and to build local

interest in adoption. Important features of secondary awareness activities include the following:

- Facilitator-sponsored conferences bring together NDN Developers and LEA representatives. The scope of such conferences has varied widely, from large-scale education fairs to conferences involving a single Developer and a single LEA. A particularly effective approach has been the specialized conference in which Developers whose programs deal with a common issue or subject area are introduced to LEA personnel interested in that issue or area.
- Effective secondary awareness activities are directed both to administrators and to instructional personnel. Methods and materials are differentiated according to the interests and needs of the two target groups.
- Interpersonal dynamics dominate secondary awareness proceedings. These conferences generally represent the LEA representatives' first exposure to the Developers and the details of their programs. In their presentations, Developers focus on important conceptual and practical aspects of their innovations. Effective Developers employ dynamic presentation styles, and most adopters recall the awareness presentation as the single most compelling experience influencing their decision to adopt.
- Effective secondary awareness materials are well organized, concise, and oriented to practitioner interests and issues. They describe in nontechnical language the major conceptual and operational features of the innovations and the types of materials and services available to LEAs interested in adoption.
- Visits of LEA personnel to demonstration sites and visits by Developers to LEAs are frequently used to confirm LEA interest in a specific program and to develop a base of local support for adoption.

- Facilitators serve screening and gatekeeping functions to help bring about matches between interested LEAs and appropriate Developers.
- Facilitators serve an important catalyst function by providing financial assistance to cover LEA expenses associated with attendance at awareness conferences, visits to demonstration sites, and purchase of materials.
- Secondary awareness activities are high volume although more focused than initial awareness activities. They are targeted to LEAs that have expressed some interest in the NDN programs and that are perceived by Developers and/or Facilitators as likely prospects for adoption.
- In-person contact between the Developer and LEA staff is important during secondary awareness. Developers who make frequent use of in-person approaches to secondary awareness are more successful (in terms of adoption consequences) than are Developers who rely heavily on materials to create local interest and support.

Most NDN Developers provide in-person training to prepare adopter personnel for actual implementation of their programs. Important features of this prestart-up training include the following:

- Most adopters receive some in-person training prior to implementation, usually in the form of a 2- or 3- day workshop at the Developer's home site or at the adopting LEA.
- Training activities are conducted by Developers and coordinated by Facilitators. The Developer's role is that of program spokesman and expert who conveys the conceptual and practical aspects of the innovation to adopter personnel. The Facilitator provides logistical and financial support for training activities.
- Training activities have become relatively standardized in terms of content and methods. Most Developers emphasize program goals and philosophy, and instructional aspects (methods and materials)

of program operations. Trainers make frequent use of methods that involve adopter staff as active participants (e.g., group discussions and simulations).

- Developers and Facilitators generally agree on training prerequisites. Few Developers or Facilitators make strict requirements of LEAs prior to training. Most, however, consider familiarity with program goals and philosophy, identification of a local team who will bear primary responsibility for implementation, and a serious intention to undertake actual adoption as important LEA prerequisites.
- Adoption agreements are frequently used to select LEAs for training. These agreements represent tangible evidence of the LEA's intention to implement the program for which training is provided. However, legalistic or highly restrictive agreements are often unacceptable to LEA personnel and many NDN participants have developed strategies that require limited commitments from LEAs.
- LEA staff have responded very favorably to training provided through the NDN.
- Demand for training has exceeded the NDN's capacity to respond. Many Developers could not accommodate all requests for training. Attempts to increase training capacity through "turnkey" training of Facilitators did not substantially increase the number of LEAs receiving training.

CHAPTER 4

THE IMPLEMENTATION STAGE OF THE NDN DIFFUSION PROCESS

The second major stage in the NDN diffusion process begins when the local adopters actually commence to implement their adopted innovation. As shown in the preceding chapter, most often this attempt at formal implementation is preceded by some degree of pre-implementation training. Although the majority of NDN activities and events occur during the initiation stage, the effects and effectiveness of the NDN approach become manifest at the implementation stage.

This general stage is characterized by two categories of adopter assistance activities--provided primarily by the Developer staff, but often also including Facilitator support or assistance. The first category, Implementation Assistance, includes on- and off-site training provided by NDN change agents and materials supplied to assist and support actual implementation by the adopters. The second category, Follow-up Assistance, also occurs during and is part of the implementation process, and appears to involve roughly equal levels of activity by Facilitators and Developers, but often at different points or in different ways. Another key feature, then, of the NDN approach is its extensive focus on the provision of on-site assistance during and following the time at which adopters begin to implement the adopted innovation.

Many of the variables affecting implementation are found in characteristics of the LEA adopters. These characteristics of LEAs operate in two general ways to affect NDN adoptions. First, they serve as markers or risk indicators, signaling the likelihood that a given form of innovation will not be successfully implemented. In this sense they constitute a form of adoption prerequisite. However, since we have access to only naturally occurring events, we have no way of knowing the sufficiency of the adoption prerequisites identified through this evaluation. Second, the LEA characteristics influence the implementation process and interact

with characteristics of the innovation being adopted and of the change agent strategy (Facilitator and Developer tactics). Accordingly, our discussion of the implementation will be built around two themes:

- (1) characteristics of school systems implementing NDN innovations and
- (2) characteristics and major influences of the implementation process.

Several interesting characteristics of school systems currently implementing NDN projects were uncovered in the evaluation. These characteristics were identified through analysis of adopter survey returns and have been elaborated by means of evidence developed from the site visits, interviews, and observations. As with the evaluation of initiation processes, survey findings related to the effectiveness of implementation assistance are analyzed through regression techniques, using adoption outcomes (scale, fidelity, magnitude, complexity, success, valuation) as criterion variables. Similarly, influences of innovation and LEA adopter characteristics are identified and developed using the regression model. In part, these findings provide insight into how the NDN approach is compatible with school organizational and contextual realities; they also suggest some limitations or oddities of the approach.

1. Patterns of Adoptions

NDN adopters tend to be rural or suburban rather than urban. As pointed out in earlier discussions, many Facilitators report that they make special efforts to reach and attract schools that are not in the mainstream of federal and state assistance programs. Judging from the survey returns, this effort is succeeding. Less than 20% of the LEAs currently implementing NDN innovations are within urban school districts, and more than 50% are classified as rural. A typical adopter district has an enrollment of about 11,000 pupils and consists of 12 elementary or feeder schools, 4 intermediate or junior high schools, and 2 senior high schools.

The geographic distribution of NDN adoptions is shown in the Figure 3 through 5 maps. Figure 3 shows the diffusion-adoption patterns for the first year of NDN activities (1974-75), Figure 4 for the second year (1975-76), and Figure 5 for the combined years.

The diffusion patterns do not appear markedly different across the two Cohort years; if anything, dispersion appears greater for Cohort II than Cohort I. However, two features do stand out from these figures. First, extremely scant adoption activity has occurred in the ten states* for which there are no NDN change agents (neither Facilitator nor Developer), whereas adoption activity appears greatest when two or more agents are based within the state. Second, except for the Northeast, adoption density does not correspond with urban density or with population density.

In our opinion, the first feature points up the necessity for coordinated change agents within states to effect adoptions. NDN projects do not readily diffuse to nonparticipating states. The second feature demonstrates graphically the nonurban bias in the diffusion pattern. Although this may not be a serious criticism of the NDN, it does represent a shortcoming. Moreover, survey results show the diffusion trend to be toward nonminority rural school systems. One explanation for this result is that the innovations being diffused are more compatible with and appealing to nonminority rural and suburban schools. This explanation seems unlikely and is difficult to defend, except perhaps as regards non-English-speaking minorities, for which bilingual programs may be more appropriate. But the common theme characterizing NDN projects is individualization, particularly in regard to intensifying the role of teachers in the instruction process. Hence, there should be no obvious bias away from urban schools inherent in the innovations. Finally, we examined the diffusion patterns across several classes of innovations, but found no evidence to indicate that this nonurban bias is innovation-

* Alaska, Arizona, Arkansas, Delaware, Idaho, Mississippi, Nevada, Tennessee, Virginia, and West Virginia.

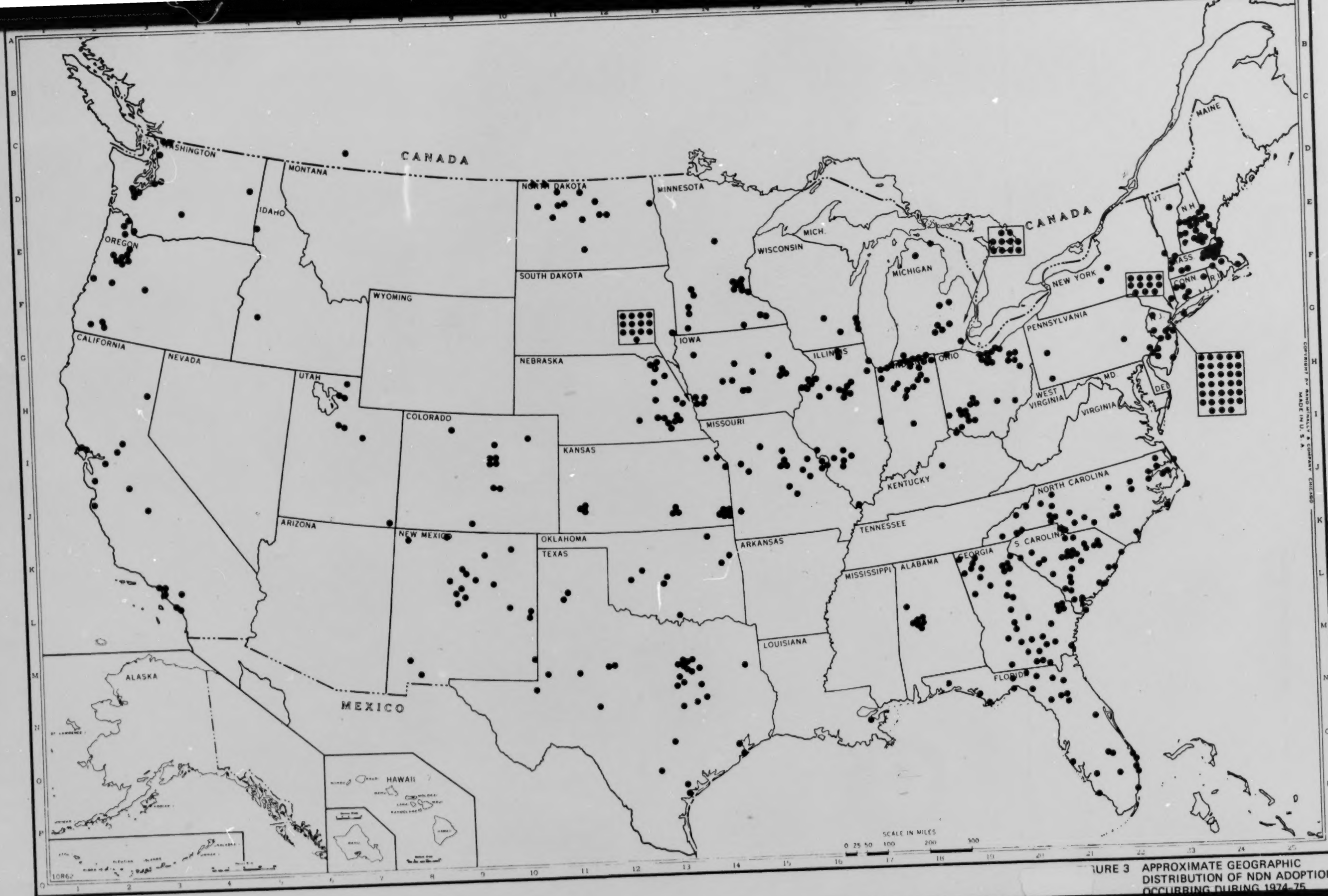
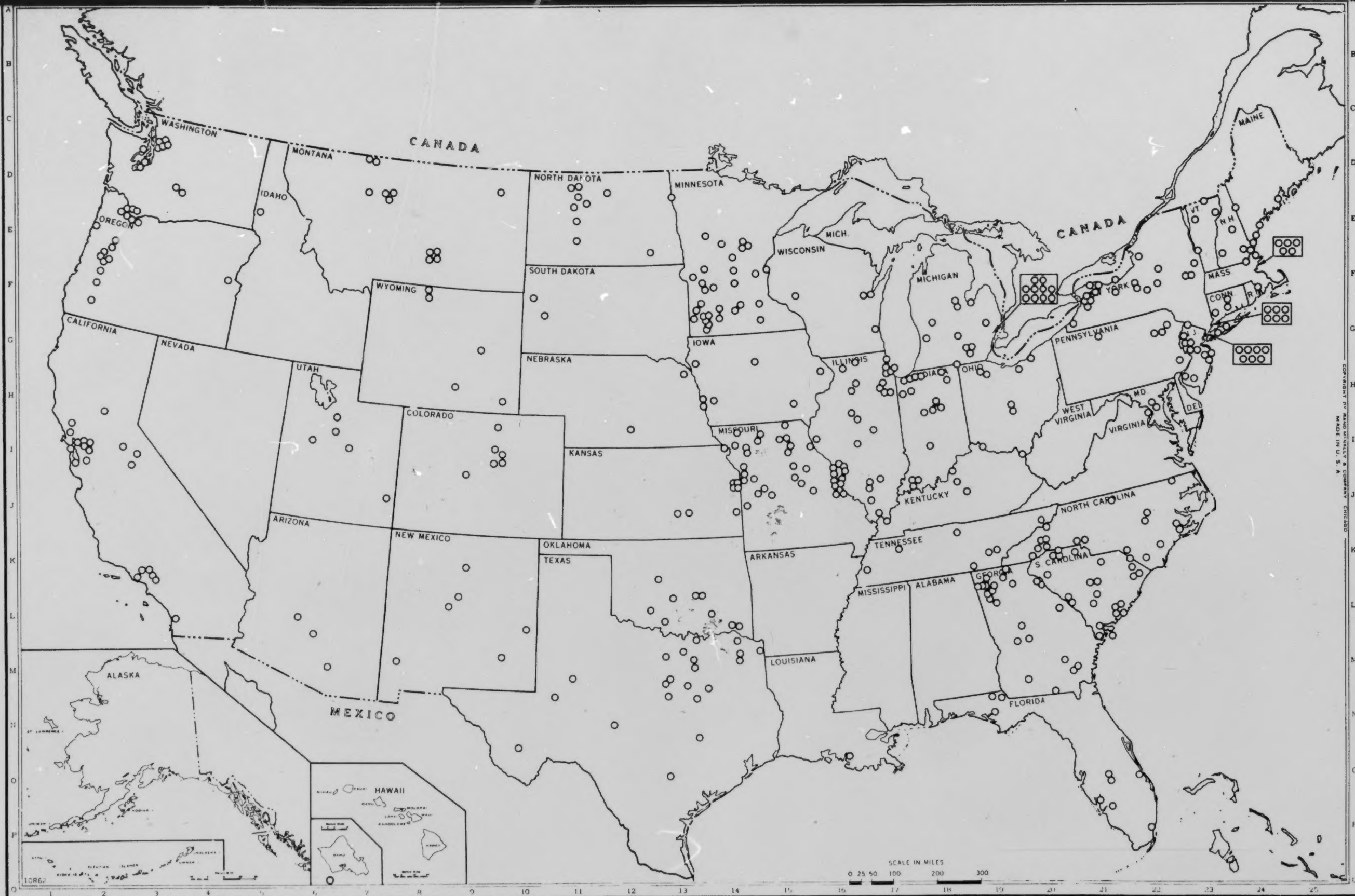


FIGURE 3 APPROXIMATE GEOGRAPHIC DISTRIBUTION OF NDN ADOPTIONS OCCURRING DURING 1974-75

SOURCE: Fall 1975 Adopter Survey.



SOURCE: Spring 1976 Adopter Survey.

FIGURE 4 APPROXIMATE GEOGRAPHIC DISTRIBUTION OF NDN ADOPTIONS OCCURRING DURING 1975-76

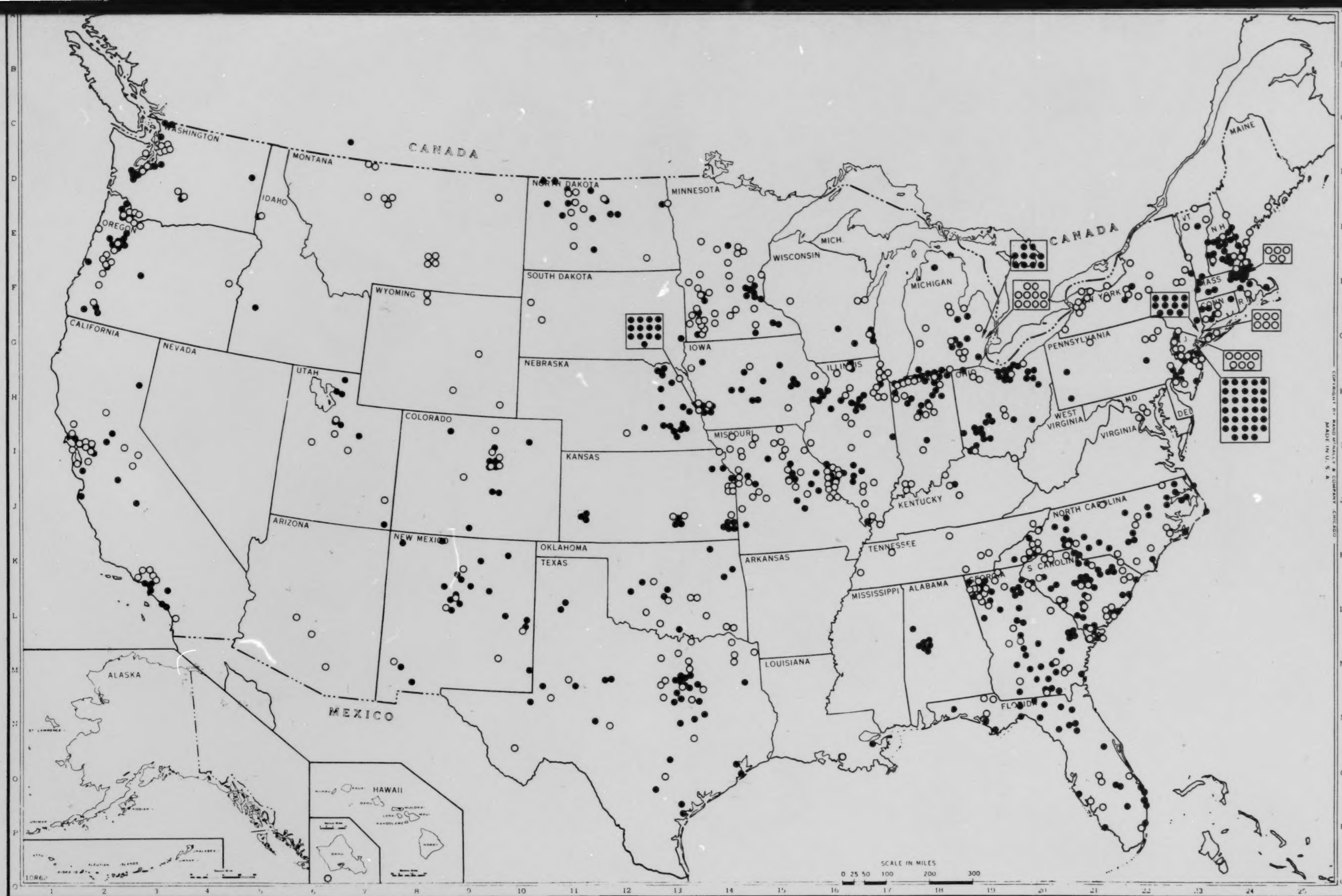


FIGURE 5 APPROXIMATE GEOGRAPHIC DISTRIBUTION OF NDN ADOPTIONS OCCURRING DURING 1974-76

or Developer-specific.* Consequently, we do not find any obvious programmatic reason why the NDN programs would not appeal to urban or minority populations.

Another possibility, one for which we have no real evidence, is that NDN staffs have not yet acquired the combination of staff specialization, skill, and experience necessary to penetrate or attract the attention of urban and minority school districts. The NDN has little in the way of strong incentives or sanctions that the large city schools have become accustomed to in dealing with change programs. Moreover, most urban and minority schools are economically hard-pressed, more so than suburban or rural schools. As a consequence, a much greater effort would be required to attract and maintain the interest of these distressed schools. Stated differently, current NDN innovations may be viewed as providing important refinements of fundamentals, but some schools, such as large urban or financially distressed minority schools, are so consumed by their struggle to simply accomplish the fundamentals that they may view these refinements as frivolous.

In our opinion, a very likely explanation for the relatively low diffusion of NDN innovations to urban schools lies in the urban school bureaucracy. Most large city school districts have complex organizations involving four or five tiers of administration and often a variety of state and federally supported innovation or improvement programs. Those locally responsible for administering these programs may view the NDN as irrelevant to their needs (i.e., the "not invented here" syndrome) or as a rival system or authority. In either case, local resistance to NDN involvement would be expected.

Moreover, based on our case studies and interviews, it seems that even when NDN projects are adopted in urban schools, there are few local incentives to acknowledge this. More typically, it appears that the project being adopted will be "re-invented" at the local level, renamed,

* Several of these Developer diffusion patterns are presented in the appendix to this report.

and neither viewed nor reported as being adopted from the NDN. At least one such case was documented through our site visit activities. The important point is that although for practical purposes the innovation has, in fact, been diffused to the urban school, there exist disincentives for local staff to acknowledge and report this. Consequently, our data may under-report, to some extent, the actual adoptions by urban schools. We feel that this issue needs further study since it has implications for what might be reasonably be expected in future dissemination efforts.

Adoptions tend to involve implementations of low to moderate organizational impact. Based on our adopter survey, the most typical adoption (35%) involves several classrooms in a single school, but a large proportion of adoptions are multischool (30%) or district wide (15%). Only 20% of the adoptions are at the level of a single classroom in the district. Therefore, in terms of implementation scale, adoptions tend not to involve highly complex organizational interface, but neither do they reflect a preponderance of change at only the simplest levels.

We feel that this pattern of moderate scale implementations (i.e., those involving several classrooms in a few school buildings) is important and may account for a large part of the early success of NDN adoptions. Moderate scale implementations are not likely to severely disrupt the ongoing organization of the affected schools. Our case studies show that often the faculty members participating in the implementation are provided guidance or assistance by NDN staff on how to minimize such disruptions. With only a few teachers (generally not more than 10) to coordinate, the local primary contact can provide the necessary further administrative and organizational assistance.

Our interpretation of the importance of this finding is as follows. When the adoption has been provided with a relatively firm footing through this moderate scale implementation, it becomes possible to spread the implementation gradually to other buildings and classrooms. Additional faculty members have opportunities to become familiar with the operations and merits of the innovation, the implementing staff can smooth out any rough edges without adversely affecting other school practices, and the

practical utility of the adoption can be assessed at a minimum of risk to the institution.

Not all implementations, of course, can be conducted at this moderate scale, as some innovations require district-wide implementation. For example, a computer-based resource planning system may have relevance only in a district-wide implementation. Yet even for innovations involving complex organizational change, attempts are made to start small and gradually work up to full implementation. During this phasing-in, the necessary skills and procedures are painstakingly taught to all affected staff members, and with major scale implementations such "on the job" training may involve a month of more or less continuous assistance by the Developer.

On the other hand, 20% of the NDN adoptions reported in our national survey are being implemented in but a single classroom in a single school. These very modest level implementations may represent substantial innovative merit in terms of program content, but they probably should not be considered strong evidence of NDN diffusion success. Only 7% of the Developer's demonstration sites involve single classroom implementation. It appears, then, that although the clear majority of NDN innovations are being adopted at moderately complex implementation levels, other things being equal, there is a tendency for some adopters to implement at the simplest (single classroom) level.

Implementations are concentrated at the preschool and elementary grade levels. Over 72% of the adoptions reported in our national survey involve implementations in the preschool through elementary grade levels. This figure breaks down into roughly 13% at the preschool-kindergarten level, 34% in the primary elementary (grades 1-3) and 26% at the intermediate (4-6) levels. Junior high schools (grades 7-9) involve 14% and senior high schools (10-12) 13%. This preschool-elementary school focus of adoptions is reasonably in line with the general curriculum emphases reflected in the collection of JDRP projects (about two out of three projects focus on elementary curriculum). Still, many Developers report that they have been attempting to extend upward applications of their

innovations; however, at the time of the survey this did not appear to be taking place in the adopting schools.

Another possible explanation for the preponderance of elementary level adoptions follows from an organizational analysis of school change. As Pincus (1974) has convincingly argued, bureaucratic costs (effort, resistance to be overcome, bad side effects) are the real "costs" in school systems. Since elementary schools have far simpler bureaucratic structures and organizations than do intermediate or secondary schools, the costs to innovate (or implement an innovative practice) should be lower for the elementary schools. Similarly, in these schools, particularly in small and rural school systems, building principals often have considerable decision-making authority. They nearly always operate as "first line managers," usually having direct responsibility for working with the implementing staff to see that the project is implemented and carried out. In this sense, the principals are a convenient but crucial intermediary: they can assist the implementation through administrative, role definition, resource allocation, and incentive means fairly directly.

The organization of secondary schools, however, generally precludes the vesting of all the necessary administrative and resource discretions within a single individual. Rather, they reside generally in a collection of individuals occupying different administrative and organizational positions in the school bureaucracy. Hence, not only are the bureaucratic costs usually greater for secondary school implementations, but the change agent's task of coordinating these components and securing commitments and concurrence is also greater.

Given the above analyses, we conclude that the diffusion and implementation accomplishments by the NDN at intermediate and secondary grade levels appear to be both substantial and appropriate. Yet more in-depth observation and analysis of the implementation process distinctions corresponding to school organizational differences are clearly needed to place these findings in proper perspective (see, e.g., Gross et al., 1971).

2. Characteristics of Successful Implementations

Successful implementation requires a strong local leader and administrative concurrence. Early in the adoption process, a local leader or primary contact is identified. NDN agents rely on the primary contact to coordinate and interface the LEA staff with the NDN programs of assistance. Our survey shows that this primary contact is most often (70%) an administrator (a principal or, rarely, a superintendent) or a staff member with administrative experience (central staff, program coordinator, supervisor, department head). Only about 30% of the primary contacts are classroom teachers.

Our evaluation has shown that a great deal of the success of the adoption depends on the leadership ability of this primary contact. For example, analysis of survey returns shows that implementation success is significantly influenced by early involvement of the implementing staff, frequent (faculty) meetings among these staff, reasonably positive faculty-administrative communication and rapport, and administrative support and concurrence. Of these conditions, most studies point to administrative concurrence as the most important, for without this it is hard to imagine a successful implementation (Carlson, 1964; Pincus, 1972; Berman and McLaughlin, 1975). This means that the primary contact, generally with the assistance of the Facilitator, must obtain informed consent at relevant administrative levels.

This support and concurrence must exist at all levels, but the influence of the support increases in relation to its proximity to the locus of adoption. Analysis of survey data reveals that whereas neutrality or mild support may be sufficient at the level of the school board, more positive support is most critical at the building level (assuming that the adoption takes place within schools or classrooms). To the extent that this proximal gradient of support is lacking, the likelihood of successful implementation diminishes.

Further analysis of the relationship of local leadership variables to implementation shows that the primary contact must also coordinate the involvement of the implementing staff. This may include providing for

their participation in the decision to adopt, scheduling and conducting the necessary project-related staff meetings, arranging for necessary inservicing, serving as site liaison for NDN training and assistance as needed, and directing the implementation and evaluation activities. The primary contact assumes the local leader role, and how he/she performs in this role profoundly influences the success or failure of the adoption.

Our evaluation findings indicate that the primary contact should, in addition to being responsible for leadership and liaison, assume some involvement in the actual implementation of the innovation. Results of multiple regression analyses summarized in Table 12 indicate that primary contacts who restrict their involvement to administrative issues may have less successful implementations. Those who avoid the administrative issues have problem-ridden implementations, most of which lead to discontinuation. On the other hand, the data in Table 12 clearly indicate that as the experience and level of involvement of the primary contact increase, nearly all adoption outcome indicators become more positive.

In general, the most successful primary contacts are district-level specialists, such as curriculum coordinators or other central staff. This category constituted 40% of the primary contacts in our study. Some advantages offered by such personnel are in their instructional orientation, administrative experience, easy access to LEA authority or decision-making staff (along with some administrative discretion of their own), and relative accessibility to NDN staff. Building principals, although closer in proximity and authority to teachers, can be distracted by the administrative demands of their current assignments. Similarly, teachers (30% of the primary contacts) generally do not have ready organizational access to other staff except on a peer basis. Their teaching responsibilities may conflict with the administrative requirements of a primary contact, and they are sometimes less accessible to NDN agents.

Still, we reason, there are risks in using central staff as the primary contact. Some have vested interests in approaches developed by colleagues or themselves; the faculties have come to associate central staff with mandated or "top down" programs, which may be little more than sound and fury; and central staff tend often to be on the fringe of actual classroom activity. All of these factors tend to reduce the

Table 12

CHARACTERISTICS OF PRIMARY CONTACT WHICH SIGNIFICANTLY INFLUENCE ADOPTION OUTCOMES
(INDEPENDENT OF NDN INPUTS AND PROCESSES)

Characteristic	Standardized Regression Coefficient	Outcome Being Influenced
• Years in school, district, or education profession	.534	Magnitude of change (innovativeness) of adoption
"	.157	Complexity of project being implemented
"	.242	Success of project implementation
• Project roles and extent of involvement of Primary Contact	.477	Scale of the adoption
"	.340	Fidelity of the adoption
"	.438	Success of implementation
	.495	LEA positive valuation of adoption

Source: Spring 1976 LEA Survey

credibility and leadership aspects of this central-staff primary contact. These considerations, then, point up the difficulty of attempting any absolute generalizations and help to explain some of the variation in local practices characteristic of the NDN approach. Often Facilitators and Developers come to agreement on who should be selected as primary contact for a given adoption. Yet equally often, a "natural" primary contact emerges from within the LEA during the earlier awareness stages.

Another set of characteristics found in successful adoptions pertain to the organizational environment of the adopting LEA. Specifically, a number of staff/administrative context measures appear to significantly influence adoption outcomes, as shown in Table 13. These results, which were obtained from the regression analyses described earlier (i.e., step-wise regression analyses performed on all input and process measures for each of the outcome measures) indicate the importance of LEA context features such as local support for the adoption, staff/administration rapport, and staff participation in the adoption process (frequent adoption-related meetings, sense of participation, motivation toward change) over and above all other influences described thus far. Moreover, the magnitude and consistency of these context characteristics in influencing nearly all outcome measures suggests they are easily as important as any other class of variables in determining adoption events. Our model of the adoption process argues that these context characteristics in part predispose adoption success, and in part are themselves influenced by events in the adoption process. These intervening events are seen as the awareness and training tactics of Facilitators and Developers, and the experience, capability, and commitment of the local leader--the primary contact. In our opinion, the survey data suggest that the primary contact may be the most important single key to overall adoption success.

Implementation generally involves at least some modification of methods and materials to adapt the innovation to local conditions. Both in the range of innovations diffused and in the characteristics of implementations in the adopting sites, the adoptions produced through the NDN are extremely diverse. To describe these results in a coherent fashion it is necessary to refer to trends and characterize the variation within each trend. There is a trend for adopters (56%) to begin implementing

Table 13

ADOPTER CONTEXT CHARACTERISTICS WHICH SIGNIFICANTLY INFLUENCE ADOPTION OUTCOMES
(INDEPENDENT OF NDN PROCESS CHARACTERISTICS)

Adoption Characteristic	Standardized Regression Coefficient	Outcome being Influenced
• Local context support	.182	Complexity of implementation
"	.278	Success of implementation
"	.593	LEA valuation of adoption
• Staff-administrative rapport	.270	Scale of adoption
"	.386	Adoption fidelity
"	.296	Magnitude of change (innovativeness)
"	.293	Success of implementation
• Staff participation in the adoption process	.361	Level (classrooms/building) of adoption
"	.421	Adoption fidelity
"	.544	Complexity of implementation
"	.325	Implementation success
"	.223	LEA valuation of adopted project

Source: Spring 1976 LEA survey

only selected aspects of the innovation rather than the entire innovation. This is because adopters are attracted initially only to certain aspects that they see as relevant, and because for complex innovations implementation appears to be a gradual phase-in process. We have observed that as the implementing staff become more competent with selected parts of the innovation, they tend to include more components in their adoption.

At the same time, adopters will modify methods and materials in what they believe are reasonable ways, so as to make the innovation more consistent or compatible with local conditions. Our survey shows that less than 20% of the adopters report that they modify these methods and materials to a very large extent. Rather, the modification typically may involve a variation on grouping, or scheduling, or substituting reasonably equivalent curriculum materials for those described by the Developer.

Developers report that they have come to see these modifications as inevitable, perhaps even necessary as part of the adoption process. Some now refer to implementations as adaptions, indicating that they actually expect some change to occur. Still, in our conversations with Developers, they showed concern that these adopter modifications might alter the core features--the spirit--of the innovation; they often caution adopters that only if all major aspects of their project are faithfully implemented by the adopter will the project be replicated.

The implementation process is gradual, cumulative, and appears to involve some degree of reinvention. Rarely are the adopted innovations implemented within short periods of time. Virtually all of the adoptions studied in depth (34) were still involved in the implementation stage, and all of these were in their second year with the project (but were in their first year of implementation). The school systems where the strongest and most substantial adoptions occurred (in terms of outcome indicators) employed systematic phase-in strategies. During the first implementation year, a limited number of staff members, generally superior or "key" teachers, in only a few schools would become involved. As they worked in the project and developed confidence and competence, additional staff members tended to become involved. In a number of these sites, plans were underway to diffuse the implementation to additional schools within the district. In several sites, neighboring districts had asked to participate.

According to both survey and site visit findings, this gradual implementation and phasing-in of the adoptions appears to be typical. For some projects, the process was uneven and there were cyclical patterns--a dormant phase followed by a renewed effort, with each cycle producing more complete implementations. Part of the vacillation seemed to involve a comparison of aspects of the innovation with standard (pre-implementation) practices, in a formative evaluation sense. We suspect the phenomenon of "reinvention," or the tendency of the implementing staff to "discover" in their own way the essential features of the innovation. This reinvention phenomenon is similar to the discovery learning phenomenon in that the adopting staff are associating the innovative components to their own practices and in their own terms. A byproduct of this process appears to be what Miles (1974) and others refer to as "ownership."

In one site that we observed, the reinvention process was so complete that the innovation had been renamed and the staff insisted that they were not now adopting the Developer's project, but had their own innovation. Nevertheless, all of the distinct organizational and pedagogical features of the Developer project were well implemented and were undistinguishable from the version in operation at the Developer site! We suspect that the reinvention process serves political as well as psychological purposes and may represent a two-edged sword with regard to evaluation, particularly if it leads to underestimates of the true extent of diffusion.

The implications of these interpretations most directly involve the evaluation methods used to document the diffusion process. The gradual yet cumulative nature of implementation of moderately complex, substantial change indicates that several years may be required for a complete adoption. The tendency for adopters to reinvent and rename suggests that self-report survey methods may be insufficient to document the rate or extent of such diffusion. The sample of adopters studied by observation or survey in this evaluation showed the implementation process to be very complex and uneven, which means that estimates of actual diffusion will vary considerably, depending on when assessments are made. Also, actual implementation appears to be so gradual and cumulative that early assess-

ments of diffusion will probably underestimate the phenomenon. We do not know what the precise implementation lag should be, as it clearly varies with local conditons and with the innovation. Some adopters had progressed well with complex innovations within the first year, but others showed less progress even with ostensibly less complex projects.

We conclude that a realistic time frame for adoption of meaningful change should be not less than two years. With NDN adoptions, the general pattern has been to use the first year as an awareness, learning, and planning year, and the second as an implementation year. By the end of the second year, we estimate that much of the character of the adoption will be fairly evident.

3. NDN Influences on the Adoption Process

Materials play a crucial role in the implementation process. The quality of materials provided by Developers to adopting LEAs heavily influences the dominant characteristics of the subsequent implementation. Based on our case studies (16 innovations in 34 LEAs), the more successful implementations are for those innovations for which fairly complete and comprehensive materials packages are provided. These materials packages consist of both management and curriculum components. An exemplary management component will contain guidelines for scheduling, logistics, requirements, evaluation, and public relations. These guidelines are often prepared in extraordinary yet practical detail; for example, a guideline on how and when to schedule meetings with parents or staff might include a variety of helpful hints such as sample schedules and notices, suggestions on time of day and how long the meetings should be, how to set up the agenda and arrange for space, and perhaps even ideas for pacing and refreshments. Such materials are nearly always based on actual experiences and techniques of the Developers, and often reflect lessons learned by Developers in assisting new LEAs to implement the project.

The curriculum component of the project materials represents the pedagogy of the innovation. Again, for the best or most successfully

implemented projects, these materials are articulated in great detail, often at the level of step-by-step daily lesson plans. For this reason, the curriculum component often constitutes the bulk of the project materials.

The combined management and curriculum components often involve many hundreds of pages, and therefore organization of the materials is critical to their use and effectiveness. Although there are no standards or uniform policies among Developers, there has been a tendency to consolidate all materials into a single package--often a reference book or a large binder--and to organize the contents by functions or stages. Several Developers have prepared specialized versions of materials to correspond to staff functions--for example, one version for a resource teacher or specialist, another for a classroom teacher or aide, and so forth.

In general, the materials characterizing the 16 NDN innovations being adopted by our site visit sample do not heavily emphasize educational technology (e.g., audio-visual devices, instructional hardware, or extensive commercial software). Instead, they emphasize the involvement of individual teachers and frequently require that teachers prepare their own instructional aids. That is, nearly all NDN innovations stress the central involvement and responsibility of the teacher, and materials are focused on changing the teacher toward the pedagogical specifics of the innovation. The technology being transferred in the implementation is the instructional style of the Developer.

Recalling that in training the major emphasis is placed on communicating the rationale, philosophy, and flavor of the innovation, it becomes clear that the materials are crucial in supplying the operational and instructional detail. It is apparent that neither is sufficient by itself to effect successful implementation. However, the relative role and potency of each component need to be further studied and clarified. At present, we suspect that the majority of implementation failures (either to appropriately implement or to sustain the implementation) have their causes in the materials provided. Conversely, carefully developed and packaged materials seem to effect and sustain very successful implementations.

Follow-up visits represent a distinctive feature of the NDN strategy.

Of all the activities and elements of the NDN strategy studied in this evaluation, none related more strongly and consistently to all aspects of adoption success than the follow-up or post-implementation contact by the NDN change agent. Most often the follow-up involved the Developer staff and nearly always it was provided in person and within the first implementation year. This is consistent with our interpretation of the dominant theme in pre-start-up training, namely, moral/ideological/pedagogical suasion. Successful training leaves the staff enthusiastic and highly motivated to implement the innovation, which they conceptually understand and endorse, but which they only partly grasp procedurally. As noted above, materials supply the flesh to the skeleton produced through training; yet nearly all adopters in our case studies reported they experience uncertainty during actual implementation.

The NDN "strategy" has recognized this need, and the tactic of follow-up contact with adopters is nearly universally employed. Nearly 90% of the Developers report that their staff have visited adopters after implementation was begun, and an even higher proportion (93%) of Facilitators use some form of follow-up contact. The thesis that this follow-up is primarily supportive and secondarily technical is clearly evident in the survey data. Both Facilitators and Developers list moral support or encouragement as the most frequent purpose for follow-up assistance--and adopters list this most frequently as the follow-up assistance they received. Beyond this morale booster, however, Facilitators and Developers differ sharply in the type of technical assistance they are likely to provide--again in line with the functional role differentiations. Developers, for example, focus primarily on materials issues and provide further in-service training as needed. Facilitators, on the other hand, concentrate on process issues, such as financial or logistical (e.g., release time) assistance, conflict resolution, evaluation, and resource allocation. According to adopters in our survey, a Developer visit is more than twice as likely as a Facilitator visit to involve material issues, whereas a Facilitator visit is nearly eight times more likely than a Developer visit to involve arrangement for consulting assistance.

Perhaps the most compelling survey evidence regarding these interactions with NDN change agents is the well-differentiated perceptions of them by adopters. Before implementation, Developers are seen as primarily providing materials and training assistance, and secondarily as providing moral support. After implementation, the reverse is true; they are seen primarily as providing moral support and secondarily as providing technical (materials and training) assistance. Facilitators, on the other hand, are seen as primarily providing moral support and financial assistance both before and after implementation. Facilitators, then, are seen as just that; i.e., they facilitate the process by providing the sanctions, incentives, and financial resources essential to initiate and implement the adoption. Developers are seen as technical agents providing content, guidance, and feedback.

From the survey data, it is not clear whether the follow-up visit itself or the technical support involved in the visit is the more critical. Interviews with adopter staff and NDN agents suggest that the issue is complex. In part, this is because Developers and Facilitators themselves modify their methods and materials based on their experience with adopters. Also, the survey shows that some Developers conduct visits to measure implementation (their primary agenda), and provide on-site assistance more as a convenience than a tactic. Others make scheduled contacts as part of a specific follow-up tactic. Still others respond to adopter requests, either forwarded through the Facilitator or received directly from the adopter. Also, it is not clear whether in-person follow-ups (visits) are superior, but we suspect they are.

Regardless of these complexities, one generalization does emerge from our investigation. If the adopter does not receive some form of NDN post-implementation contact, the adoption falters! This is supported both in analysis of statistical influences on continuation of adoptions and in analysis of causes for discontinuation. The best follow-up seems to be of a nature and level consistent with the Facilitator-Developer roles and local interfaces (generally administrative for Facilitators, instructional for Developers), although, as noted above, many exceptions occur.

NDN implementation assistance is positively evaluated by adopters.

It is clear from the surveys that LEA staff are grateful for the assistance provided and regard NDN change agents very positively. Although LEAs tended to rate assistance received from Developers as more useful than that received from Facilitators, the differences are small and not statistically significant. Stated differently, 7% of the adopters rated Developer assistance as not useful, whereas negative ratings for Facilitators were received from 11% of the adopters. Also, the Developer was far more salient as a change agent to LEA staff than was the Facilitator. More than 90% of the adopters recalled the assistance provided by Developers, whereas less than 60% recalled specifics of Facilitator assistance.

Even though Facilitators are less salient to the adopter staff in terms of on-site assistance, still they are rated as significantly more accessible than the Developer staff. This is in terms of both the Facilitator role (a behind-the-scenes process advocate) and their relative geographic proximity to LEAs in their state or region.

Developers, on the other hand, while less accessible, clearly have made stronger and more favorable impressions on the LEA staff. For example, although both Developers and Facilitators are rated very positively, still adopters see Developers as, on the average, significantly more organized, enthusiastic, and competent. Also, Developers tend to be considered as more helpful and straightforward (candid) than Facilitators (both agent types being rated positively, with Developers receiving the more positive rating). This, again, is very consistent with our observations of Developer styles. They tend to be practical, dynamic, experienced, and confident. They can handle questions and relate to school-level problems. They are practitioner colleagues and have, on the whole, learned to communicate with their audience.

The "turnkey" experiences, while disappointing, were not complete failures. Facilitators report that the most common deficiency in the turnkey trainer was a lack of confidence or convincing style compared to that displayed by Developers. That is, because turnkeys had not generally experienced a local implementation of the innovation, they could not

convincingly deal with many of the issues and interests of potential adopters. Basically, they lacked the depth of experience that characterizes Developers.

On the other hand, our in-depth study of adopters showed that most well-implemented adoptions had one or more "key" staff members serving as technical project representative to new interested schools. Often this was the primary contact, but equally often it was one of the lead teachers or resource personnel. Such individuals, having experienced the implementation and having successfully resolved problems, etc., possess the necessary experience component missing in the "turnkey"* model. We have referred to this experience-based diffusion (i.e., adopters becoming trainers and technical assistants to new adopters) as secondary diffusion.

NDN adoptions tend to involve reasonably substantial change at relatively low perceived local costs and are highly regarded by adopters. Better than 60% of the primary contacts surveyed see their implemented project as representing a substantial innovation or change over their previous practices, and an additional 25-30% see the change as moderate. This change, however, is rarely radical or of the type reflecting a total departure from previous educational philosophy. Instead, the majority of adoptions deal with content or methods already part of the school system's approach, and in only 28% of the adoptions do the LEAs report that the subject matter of their adoption is completely new. In most cases (84%), the innovation is a supplement or alternative to a current program or practice, and the LEAs' attraction to the innovation seems primarily to be based on the extent to which it appears to offer improvement (i.e., its "relative advantage" described by Rogers and Shoemaker, 1971). Still, the vast majority (90%+) report that their adopted project meets or satisfies major needs of the school, is working well, and will turn out to be a very successful local improvement. Even though 17% of the adopters report that

* The "turnkey" model assumes that training is a technical task and that staff can be trained to become trainers more or less independent of actually implementing the innovation. The implicit assumption is that training is primarily a cognitive or information enterprise.

some aspects of the project have aroused controversy, still 94% insist that it fits well into the current system and 96% report that most, if not all, implementation problems have been (or are currently being) overcome.

That the NDN adoptions do not generally represent radical local changes is important and needs further comment. First, this is not a limitation imposed by the array of innovations available. For example, an adoption of Saint Paul Open School by a traditionally organized, or "self-contained," school system would represent a radical change. But this does not tend to happen. Rather, both our site visit and survey evidence indicate that a more characteristic adoption of the Saint Paul Open School project is by a district already attempting to introduce an open educational model into its schools, but with limited success. The well-developed Saint Paul project offers this adopter a collection of practice-based solutions to a large variety of problems typically involved in the changeover. Hence, the adoption of the project will be seen by the staff as a "supplement" rather than a "replacement." This does not in any way diminish the significance of the adoption, since from the LEA perspective the NDN has provided access to knowledge and expertise relevant to the LEA's immediate and long-range needs. It does comment on the change process and suggests that it would not be realistic to anticipate a great deal of radical change. Rather, substantial change appears to be gradual and incremental.

The perceived local costs to adopt NDN projects further support this view of change. Although the reported costs have an enormous range (from virtually nothing to over \$200,000), the median incremental (added, or over and above normal district) cost is just \$600! Obviously, this vastly underestimates the true cost, which would include staff and administrative salaries, building and maintenance, resource and materials components, and so on. But adopters see the innovations generally as changing their practices. They do not have to add staff, rarely have to purchase exotic and expensive hardware, and almost never have to modify bricks and mortar. The innovations are accommodated into the existing organization of the school (or, in certain cases, modify the organization), and as such, do

not appear at all expensive. Stated differently, the NDN innovations are not typically adopted as add-on projects. Rather, in most cases (85%) they are used as programs oriented to produce more effective utilization of existing resources. The major costs involved in effecting this change seem to be borne by the NDN in subsidizing the awareness and training components.

The implications of these findings pertain to the relative merit of such "low cost" change, particularly in view of typical development costs of innovative programs. The tendency has been to recognize the cost of change as being relatively high. Therefore, can a project that appears to cost so little to implement really be of any consequence? We do not have an answer at this time, since measurement of pupil change has not been included in this evaluation. What evidence we have been able to obtain (e.g., New Jersey Evaluation report) indicates that at least some adopted projects do replicate Developer effectiveness, particularly when Developer implementation and evaluation criteria are used. Also, since the implementation cumulates over time, it is reasonable to infer that evidence of the effectiveness of the adoptions should correspondingly accrue. On the other hand, it may be that in the processes of being implemented, adapted, and assimilated, the innovations become changed in subtle yet profound ways such that they become less effective.

At least some systematic studies of the consequences of these adopted innovations, in terms of their objectives, will be needed to address the issue of their ultimate merit. Since the clear majority (87%) of adopters indicate that they now conduct or plan to conduct thorough evaluations of their adoptions, some evidence may already be available. Also, most Developers and Facilitators routinely gather effectiveness data regarding sponsored adoptions. Perhaps these three sources, combined with independently administered evaluations on a sample of adoptions, could be used to generate the relevant data.

Aside from "hard" evidence of educational merit, there is little doubt that the NDN program has been a success from the adopter perspective. Interviews with the adopting staff coupled with survey findings have convinced us that they do approve of their adopted programs and are grateful for the assistance provided by the NDN.

This positive regard for the NDN and the adopted projects is even more significant because there are few material incentives for LEA participation in the NDN. That is, there is little chance that LEAs become involved for the opportunistic reasons described in the Rand (1975) report on change agents. Instead, adoptions must be sustained pretty much on their own merits, and there are few motives, short of dissonance reduction, for LEAs to praise the system insincerely. This suggests that the NDN approach embodies considerable political and social power, is viable, and must be taken seriously.

One key to the success of NDN adoptions appears to be the practitioner focus of JDRP-approved innovations. To better understand the consumer appeal of NDN innovations, as well as the nature of practitioner (or educational) change that their wide-scale adoption and implementation might involve, we have examined in some detail the essential elements of a cross section (16) of JDRP projects (i.e., those selected for the site visit case studies). The curriculum nature of these selected innovations ranged from basic skills to physical or environmental education; the intended grade levels ranged from preschool to high school; the philosophy varied from intact classroom management to open education; and the methods varied from programmed instructional technology to experiential or discovery learning. Included were projects designed to improve perceptual acuity and learning readiness in young children; to develop readiness for parenting among high school students; to enhance social awareness and self-concept through wilderness experience; to integrate aspects of learning disabilities curriculum with home room curricula; to use an applied linguistics approach to language arts instruction; to achieve high mastery of reading skills through prescribed instructional methods and sequences; to provide learning experiences for four-year-olds in home and school settings; and to foster student-managed learning in an open-shop industrial arts program.

Broad as this array of innovations appears, still the projects have a common underlying theme, namely, emphasis on individualized teaching styles. Nearly all these innovations are teacher-intensive and require extensive application of individualized instructional methods. More

importantly, they represent actual applications of individualized methods, rather than vague philosophy or jargon. The Developers have worked out the methods in great detail and provide adopters with fairly elaborate training and materials to enable them to employ these methods.

Two aspects of this crosscutting individualized theme seem especially important. First, unlike many of the curriculum innovations of the 1950s and 1960s, these NDN projects are not presented as teacher-proof. Rather, teachers constitute the fundamental resources of the innovations. The innovations essentially represent advances in the state of the art of teaching, developed by practitioners and in practitioner contexts. We believe that this has rendered the innovations less threatening and more acceptable to the staff in adopting LEAs.

Moreover, these projects represent more than trendy jargon. They are well-developed applications of individualized methods in a variety of content areas, complete with necessary materials and documentation. For teachers who recognize the value of specializing their style to individual differences in learners (e.g., diagnosis and prescription), the NDN innovations appear very attractive. Furthermore, many district administrators recognize this and offer renewal credit to faculty members participating in adoptions.

A second important aspect of the individualization theme of NDN projects is their staffing and resource requirements. For virtually all projects studied in our evaluation, local hardware and software costs are minimal and none require major staff or resource additions. Instead, the projects are generally intended to make use of available personnel and facilities. The change introduced by the projects concerns what these personnel do, and hence relates to the essence of education. This fundamental focus on practitioner change makes the adoptions less expensive (they do not require outlays for additional staff or buildings) and more likely to endure.

Of course, not all faculty members are attracted to the teaching methods and styles embodied in NDN projects. Our studies of adopter staff revealed that some teachers are reluctant to abandon traditional methods and require extensive follow-up assistance. This underscores the importance of careful selection by the NDN (Facilitator and Developer) of staff to be trained to implement the project.

We conclude that the implementation proceeds most orderly and successfully if the initial staff in the adopting schools are restricted to particularly able and competent teachers who are already fairly compatible with the theme of the innovation. By focusing training and implementation assistance on these key staff members, the chances for success in early tryouts are increased and these staff members become models and resources for other teachers in the school or district. Basically, then, our study shows that the process within a school or district resembles the overall diffusion process, i.e., implementation is initiated among the more innovative staff members and gradually is spread to other relevant staff members, with the early innovators serving as models.

Secondary diffusion appears to be substantial. Secondary diffusion refers to the spread of innovations from adopter sites to additional sites but without the direct intervention of the NDN. A number of Facilitators are relying on secondary diffusion to provide program dispersion within their state or region. Others have more deliberate plans to coordinate NDN adoptions into their state-level networks, essentially treating the adoptions as within-state demonstration sites for interested LEAs. This emphasis on secondary diffusion--or "ripple effects"--follows from the inherent limitations of NDN resources: a given Developer can provide adoption assistance to only a few LEAs per year--probably not more than 20 LEAs for most Developers. Therefore, for popular innovations, alternative strategies for meeting demand are necessary.

As many Facilitators have learned, the "turnkey" strategy does not appear to be a satisfactory alternative. Accordingly, many Facilitators have developed secondary diffusion or pyramid plans by which high quality adoptions would serve as demonstration sites for interested local

LEAs, and staff at these primary adoption sites could assist in training new adopters. Essentially, this plan depends on secondary diffusion processes for its success.

There is limited evidence available from our evaluation that secondary diffusion processes are substantial. Adopting LEAs seem to be fairly active advocates of their adopted innovations; as the success of the implementation increases, the tendency to espouse it to other LEAs also increases. More than 85% of the adopting LEA personnel in our survey claim to have advocated their adoption to others. The strongest advocates are administrators (superintendents, principals, and primary contacts), yet an impressively large proportion of teachers (83% in the in-depth teacher survey) report that they have encouraged friends in other districts to try out the innovation.

The extent of spread by means of these informal personal-network processes needs to be further studied and documented. Also, issues such as the extent of modification or dilution of the essential features of the innovation need to be better understood. Still, some structured form of secondary diffusion seems to hold the best current promise for increasing the user base of NDN programs.

Evaluation Conclusions

If the tone of the preceding description of findings appears overly positive, it is because many of the locally evident consequences of the NDN were not anticipated. Although it has been apparent to us that a great many of these findings relate most directly to the forcefulness, charisma, sense of enthusiasm, attention to detail, and hard work of the NDN participants, and thus may not be generalized beyond the people involved, still we have been impressed by the magnitude and quality of local change that this social enterprise (the NDN participants) has been able to accomplish in two short hectic years. Well over 1,000 relatively well-rooted adoptions seem to have been effected, nearly all of which are viewed with great satisfaction by the respective adopters. This by itself

is a significant social accomplishment and points up at least one viable strategy for intentional change of institutions. Moreover, we reason that the nature of change introduced through NDN adoptions--namely, practitioner change--may be far more profound in its educational effects than more conventional structural changes (adding staff or equipment, rescheduling, etc.).

Still, our evaluation lacks the crucial data to advance more definitive conclusions--evidence of educational impacts. Although we reason that the chances are good that such evidence will be forthcoming, it is at present too early to do much more than speculate. The change process is only gradual, not dramatic. As the implementations diffuse to more staff, stabilize, and become assimilated into conventional practice, the acid test of their educational merit can be made.

4. Summary of the Implementation Stage

In this chapter, the NDN process has been evaluated in terms of effects at the implementation stage of adoptions. The major characteristics of NDN adoptions and their associated usefulness can be summarized as follows:

Adoption Patterns

The majority of NDN adoptions occur within rural or suburban school systems. Urban school systems, which serve a large portion of the nation's student population, account for only 20% of the NDN's reported adoptions. Among the most likely explanations for this phenomenon are the complex organizational structures characteristic of urban districts and the tendency of urban adopters to describe their programs as locally developed rather than as adopted from a source outside the district.

Adoptions tend to involve implementations of low to moderate organizational impact. The most frequent reported level of implementation is multiple classrooms within a single school (35%), although 30% are multi-school adoptions and 15% are district-wide. The generally moderate level of adoptions facilitates management at the local level and

provision of follow-up assistance from NDN staff. Many adopters report plans to expand projects to additional classrooms and schools once they have become relatively well established at this initial low to moderate level.

Adoptions are concentrated at the preschool and elementary grade levels. This pattern appears to be due to characteristics of the innovations and to organizational features of the adopting units. That is, a majority of the JDRP-approved programs serve pupils in preschool and/or the elementary grades at the demonstration sites. Furthermore, the organizational structure of elementary schools is less complex than that of secondary schools, which makes local coordination and management as well as provision of assistance from NDN staff simpler at the elementary level.

Local Factors Associated with Successful Implementation

Successful implementation requires a strong local leader and administrative concurrence. The success or failure of an NDN adoption is due largely to the leadership exercised by the primary contact in obtaining informed consent from local administrators and in locating and coordinating the activities of the instructional staff who carry out the actual implementation. The involvement of successful primary contacts usually extends to both administrative and instructional areas.

Most adoptions involve some modification of methods and materials. Most adopters see some modification of project materials and/or methods as necessary in order to adapt the innovation to local conditions. Developers generally regard some local modification as inevitable and perhaps appropriate. They are concerned, however, that local modifications retain the core features and guiding principles of their innovations, and only one in five adopters reports major changes from the original project.

The implementation process is gradual and cumulative. Strong adoptions generally involve a systematic phase-in strategy, and a realistic estimate of the time required for full-scale implementation is two years. In the first year, most adoptions involve a small number of LEA personnel, and often only a few components of the programs are implemented. Furthermore, although many adoptions expand to include additional project components and new staff in the second year, the increasing sense of local "ownership" leads to difficulties in using self-report methods to document the diffusion and implementation processes. Further study of these phenomena is needed.

NDN Influences on the Implementation Process

Materials play a crucial role in supplying the operational and instructional detail of the NDN innovations. Training and other in-person assistance generally emphasize program rationale and philosophy, while materials provide the detailed explication of curriculum and instructional methods. Successfully implemented projects are associated with carefully developed and well-organized materials for communicating the instructional content and style of the innovation to the user.

Follow-up visits represent a distinctive and important feature of the NDN strategy. It is not clear whether follow-up visits and other contacts serve mainly to provide technical (programmatic) assistance or to provide moral support and encouragement to adopter personnel. However, some follow-up contact with the innovation Developer during the implementation stage appears necessary to sustain adoptions.

Implementation assistance received from NDN personnel is evaluated positively by adopters. From the LEA perspective, the Developer is generally a more salient change agent than the Facilitator, particularly during the implementation stage. However, assistance received from both categories of change agent is rated highly by a substantial majority of LEA personnel.

Adoptions facilitated through the NDN tend to involve reasonably substantial change at a relatively low perceived local cost. The majority of NDN adopters view the innovations they are implementing as supplements or alternatives to ongoing programs and practices rather than as radical changes. Nine out of ten report that their programs address important, locally recognized needs, are working well, and represent a clear improvement over previous practices.

The practitioner focus of the JDRP-approved innovations appears to be a key to the success of NDN adoptions. The NDN innovations are well-developed applications of individualized methods in a variety of content areas. They are teacher-intensive (rather than hardware/software-intensive) programs, complete with materials and documentation of instructional methods and curricula to supplement in-person training.

Secondary diffusion appears to be substantial and holds promise for broadening NDN impacts substantially. Since a given Developer can provide direct adoption assistance to a relatively small number of LEAs per year, strategies for increasing the spread of the innovations should be considered. Although the "turnkey" strategy has met with relatively little success, it appears that well-established adoptions may be able to function as secondary demonstration/training sites. Evidence of secondary diffusion suggests that LEA personnel have already functioned as active advocates of their adopted innovations.

CHAPTER 5

ORGANIZATIONAL ANALYSIS OF THE NDN

The preceding two chapters present findings and evaluations from the study of the NDN diffusion process. In this chapter, organizational characteristics of change agents and of the NDN program are described and evaluated. The focus of this organizational analysis is on identifying the strengths and weaknesses of this diffusion system and its components, so that participants and administrators may take steps to improve or modify the system, as appropriate.

The chapter is organized in four sections. The first section describes the staffing and organizational features of change agent projects. These features are compared and contrasted to differentiate change agent roles and functions, and are evaluated against outcome measures so as to identify their importance to the diffusion process. The second section focuses on the NDN infrastructure. Using Miles' (1964) formulation of temporary systems, the NDN is analyzed for structure and coherence relevant to its mission. Participant roles, alliances, power structures, and communications are described and evaluated in terms of NDN goals, objectives, and effectiveness criteria. The third section describes and evaluates U.S. Office of Education management and leadership aspects of this diffusion system. Finally, the fourth section describes and evaluates the technical assistance component--the Educational Diffusion Project--intended to serve as a centralized national exchange and technical assistant for NDN participants.

1. The Staffing and Organization of NDN Change Agents

The staffing characteristics of the 64 Facilitator and 62 Developer projects responding to the evaluation survey are summarized in Table 14. The table shows the average Developer staff is larger and more specialized toward instructional issues than is the average Facilitator staff. Developers average more individual professionals, more professional full-time equivalents, and more staff with elementary and secondary teaching experience (all at or beyond the .05 confidence level). Developers also tend to have more staff with college teaching or research experience than Facilitators. This staffing pattern is consistent with a general role definition of the Developer as the practitioner-oriented content specialist. In other words, given the practitioner orientation of the Developer in the NDN, one would expect to find more teaching-experienced personnel in Developer project staffs, which, in fact, seems to be the case.

Facilitators, on the other hand, show more process specialization and orientation in their staffs. They average significantly more staff with previous experience as adopters of educational innovations ($p < .05$) and tend to have more staff experienced in educational dissemination than do Developers. Most Facilitator staff members have experience working in LEA settings either as teachers or administrators. Both Facilitators and Developers exhibit background characteristics consistent with a strong practitioner orientation.

Most Facilitator projects were newly formed organizations, established to initiate, coordinate and facilitate diffusion activities at a state or intermediate level. Because of Title III-306 funding, the Facilitator projects were administered through a cooperating LEA, although their effective organizational and operational base was at an intermediate or state level. Accordingly, many Facilitator projects were reasonably well connected to their State Education Agencies, often with the support of the latter. For example, 81% of the Facilitator projects surveyed report their SEAs advertise or endorse them to local schools, and 75% report the SEAs refer potential adopters to them. Less than 5% of the Facilitators perceived their operations as being in competition with the state dissemination programs. Facilitators

Table 14

TYPICAL STAFF COMPOSITION OF NDN FACILITATOR
AND DEVELOPER PROJECTS

	<u>Facilitator</u>	<u>Developer</u>
	<u>Average staff</u>	<u>Average staff</u>
Total number of professional staff paid by NDN grant	* 2.2	3.4
Professional full-time equivalents	* 1.4	2.0
Staff with elementary or secondary teaching experience**	* 2.6	3.5
Staff with college teaching or research experience	1.4	1.5
Staff with other relevant professional experience in a school or district	1.7	1.3
Staff with previous experience as adopters	* 1.9	1.4
Staff with previous experience in educational dissemination	2.1	1.7
Staff with previous experience training others for implementation assistance	1.8	1.7
Staff with other specific task preparatory experience	1.5	1.7
Staff on board prior to DD grant		2.8

* Differences in Facilitator and Developer staff composition significant at $p < .05$.

** Slight differences in staff counts (total number of professional staff paid by NDN grant vs. staff with elementary or secondary teaching experience) are probably due to item wording. Only the first item restricted counts to those staff paid by the NDN grant. Apparently, then, some volunteer or district-paid personnel exist in these Facilitator and Developer staffs.

frequently report receiving technical assistance (61%); resources, facilities or equipment (33%); or even administrative endorsement and assistance (16%) from their respective state agencies.

Facilitator projects represent a new component in the linker system. By virtue of their staffing characteristics, they represent a practitioner-level orientation. Yet organizationally they function as dissemination agents for their respective states, albeit unencumbered by excessive state agency bureaucracy.

By contrast, Developers' functions were carried out by organizations already operating prior to the NDN. Survey findings indicate that most Developers had begun disseminating their projects at least two years prior to their affiliation with the NDN. Although they augmented and reorganized their staffs somewhat to accommodate the NDN scope, their staffs from previous operational phases were largely intact. Also, nearly all Developer projects retained their base of operations within their "home" LEA--the school system within which the innovation was developed and validated--thus avoiding administrative and organizational problems of relocating.

Survey evidence indicates Developers were reasonably secure in this organizational arrangement. Only 3% reported any degree of local opposition to their activities as NDN Developer/Demonstrators, probably because of tactics they have employed to attend to needs and interests of their home LEAs. Among these tactics were regulating the volume of visitors to the demonstration site, scheduling intermittent as opposed to extended field work, and emphasizing national recognition and prestige afforded the LEA through NDN participation.

The relative importance of these staffing and organizational characteristics to adoption outcomes was evaluated by means of regression analysis. The results of these analyses indicate that overall, Developer staff and organizational characteristics are far more relevant to adoption processes (adequacy of training, fidelity, implementation complexity, perceived success, LEA valuation), whereas Facilitator characteristics seem relevant to adoption consequences (adoption status, secondary diffusion). This finding is consistent with the interpre-

tation that Facilitators function as initiators of the adoption process (i.e., identifying potential adopter interests and needs, coordinating potential adopters with Developers, and securing the necessary administrative commitments and sanctions) and tend to promote the local and regional spread of successful adoptions. Our analyses show that Facilitator projects with strong base support (i.e., well coordinated with their SEA) are most successful in promoting adoptions. Apparently, these successful Facilitator projects cultivate and appropriately exploit SEA interests in new programs and methods, secure the backing of the state, and communicate these priorities and endorsements to the local schools. Also, our case studies show Facilitator projects that differentiate their staffs (e.g., rural school specialists vs. urban specialists, or central office specialists vs. building specialists) seem to be better able to interact with target LEAs, both in terms of relevant issues and appropriate levels of discourse.

Regression analysis of Developer staff and organizational characteristics show them to be more related to qualitative aspects of the adoption processes and outcomes. These regression results are obtained from the same series of analyses described earlier which analyze all available measures (inputs and processes) for each outcome measure. The Facilitator and Developer staff and organizational characteristics which significantly and independently (over and above all other significant variables) influence adoption outcomes are summarized in Table 15. These results indicate larger and more experienced Developer projects seem to provide more and better materials to the adopters and tend to effect encouragement of selective adaptations and phase-in (starting small) implementation than do smaller and less experienced Developer projects. Finally, these Developers are more successful in obtaining financial assistance from Facilitators, in reducing costs to the adopters, and in meeting adopter needs and interests (i.e., they receive more positive adopter evaluations).

The above findings suggest some accumulation of expertise, stabilization of roles, and integration of functions among the more "expert" Facilitator and Developer projects. Statistical regression findings

Table 15

DEVELOPER AND FACILITATOR STAFF CHARACTERISTICS WHICH SIGNIFICANTLY
INFLUENCE ADOPTION OUTCOMES

Staff Characteristic	Standardized Regression Coefficient	Outcome being Influenced
● Size and experience of Developer staff	-.369	Adoption fidelity
"	.471	Provision of adoption materials
"	.344	LEA positive evaluation materials
"	.264	LEA valuation of adoption
● Extent of Facilitator staff specialization	.243	Extent of secondary diffusion by LEA
● Number of years Developer project has disseminated innovation	-.333	Scale of adoption (number of class-rooms and buildings)
"	.333	Complexity of project implementation
"	.215	Implementation success

Source: Spring 1976 Developer and Facilitator surveys

also indicate that large and reliable differences in diffusion success can be attributed to staffing and organizational properties of the change agent projects over and above the effects due to their specific diffusion tactics, characteristics of innovations, and characteristics of the adopters.

The specific reasons for these effects are not well understood, but some insights were obtained through field interviews conducted among the staff of 16 Developer and 16 Facilitator projects. Basically, these interviews revealed that Developers see their tasks as well defined, almost obvious. This is understandable, given that prior to the NDN Developers generally were involved in efforts to disseminate their innovations and learned much about the process. However, in these earlier efforts, many Developers acquired staff, skills and contacts which they were later to see defined by the NDN as the responsibility of Facilitators. This introduced considerable ambiguity, and in some cases conflict, regarding the nature of the Facilitator role. This ambiguity has interfered to some extent with the efficiency of NDN operations.

From an organizational perspective this consequence was inevitable. The most salient or unique feature of the NDN strategy is the division of labor between two categories of change agent, specialized in functions yet required to coordinate and interact. The Facilitator assumes part of the change agent role which had previously been left entirely up to the Developer. At the same time the Facilitator assumes roles (obtaining SEA sanctions and approval) which were previously unavailable to Developers, and which enhance the Developer's credentials and viability. In short, we discovered a basic trade-off at the level of roles and responsibilities. What the Facilitators provide to Developers in the way of access to schools, process support, credibility and legitimacy (all of which appear to enhance the prospects for adoptions) is at the cost of Developer autonomy, status, and, to some extent, control over the process. To participate actively in the NDN, Developers simply had to forfeit their exclusivity and become partners with newly appointed Facilitators, some of whom had limited knowledge or interest in specific educational innovations.

From the Facilitator point of view, knowledge of innovation specifics represented in the pool of JDRP approved projects was not nearly as important as knowledge of staff characteristics of the Developers. Facilitators saw their role as legitimizers and catalysts; as advocates of a change process rather than of a particular project. This has been a major source of dissatisfaction among some Developers, who preferred to view Facilitators as spokesmen and brokers for their individual projects. This was a particularly sensitive issue for Developer projects that had, prior to the NDN, developed fairly advanced systems of their own, often including some limited networking.

One difficulty from the Developers' perspective has been the procedure by which Facilitators are selected. Many Developers observed this procedure is in sharp distinction to the elaborate screening and selection process they endured in obtaining JDRP approval. Second, there were too few explicit understandings of just what the nature and limits of role trade-offs should be, how these were to be accomplished, and what safeguards were available.

We feel these problems were to some extent inevitable, for it would have been difficult and inappropriate to establish in advance rigid and formal specifications governing participant roles and interactions. Indeed, such formalization clearly would have worked to the disadvantage of the NDN, given the NDN was more of a social experiment than a formal system. Still the absence of precedent, of formal consensus procedures, of well articulated conventions, left far too much up to chance. Many Developers attributed their associations with Facilitators to luck (good or bad), or to being in the right place at the right time. And to more experienced Developers, the situation appeared at the same time attractive and risky.

In retrospect, it appears that during the first year of operations, the more sophisticated and risk-oriented Developers and Facilitators took advantage of the weak NDN structure in fairly predictable fashion. Occasionally more advanced or assertive Developers allied with less sophisticated Facilitators, and well-established Facilitators attracted

novice Developers. More often, however, the pairings or alliances reflected mutual levels of sophistication and leadership. This more-or-less "natural" pairing seemed to involve minimal difficulty in role negotiations, and may be an optimal technique for starting. However, a sizable number of Developers within each cohort did not successfully negotiate role exchanges with Facilitators, and even less interaction occurred across the two cohorts. Specifically, the evidence from the survey reveals that this internal networking during training was far from uniform or complete, and has shown a marked bias favoring Cohort I participants (i.e., those entering the system in 1974-75). Surveyed Developer projects reported that, on the average, less than 50% of their training activities were coordinated closely with relevant Facilitators. The distribution across Developers is markedly bimodal, with a third of the projects reporting almost no coordination with Facilitators, and a third reporting almost total coordination.

Furthermore a tabulation of Developer training activities by Facilitator region, as reported by Facilitators, shows Cohort I combinations were two to three times more likely to occur than any other combination (see Table 16). As Table 16 indicates, Cohort I Facilitators reported 306 Cohort I Facilitator-Developer combinations at the training stage, which represents 17% of all possible Cohort I combinations. Combinations involving Cohort II Facilitators and/or Developers represented only about 6% to 7% of the possible combinations. Taking the number of Developer projects and Facilitator regions into account, a given training activity was most likely to involve an "experienced" (Cohort I) Developer in an "experienced" Facilitator region, followed in rank order by "new" (Cohort II) Developers in "new" Facilitator regions, and "new" Developers in an "experienced" Facilitator region. The least likely combination was the "experienced" Developer with the "new" Facilitator.

This pattern of networking is consistent with the NDN Facilitator's role as a process advocate, primarily instrumental in coordinating resource and organizational requirements. Apparently, more experienced Facilitators are better established in serving this function and thus attract more Developers and facilitate more training and subsequent diffusion. We assume that as new Facilitators gain in wisdom and experience they will close this gap.

Table 16

PERCENTAGE OF ALL POSSIBLE DEVELOPER-FACILITATOR
LINKAGES FOR TRAINING ACTIVITIES DURING 1975-76
SCHOOL YEAR*

Developer Projects†	Facilitator Projects		
	Cohort 1 (41)	Cohort 2 (15)	All (56)
Cohort 1 (44)	17.0 % (306)	5.6 % (37)	13.9% (343)
Cohort 2 (32)	7.5 % (98)	6.3 % (30)	7.1 % (128)
All (76)	13.0 % (404)	5.9 % (67)	11.1 % (471)

* Data obtained from Spring 1976 Facilitator survey. Entries in parentheses () indicate number of projects identified or reporting.

† This count includes funded and nonfunded JDRP-approved programs.

A note of caution should be attached to this "maturation-effective-ness" interpretation, since the evidence has not been controlled for cumulative effects. Counts obtained from the "experienced" Cohort I Facilitators generally include training sessions from both Year 1 (1974-75) and Year 2 (1975-76). Still, since the internal differences shown in Table 16 are greater than could possibly be due to simple cumulative effects over time, the maturation hypothesis is tenable. It seems, then, that the pattern of diffusion of Developer projects is heavily influenced by characteristics, particularly experience, of Facilitator projects. To better understand this phenomenon and its evaluative implications, we have analyzed the NDN infrastructure from the perspective of a temporary system, suggested in Miles (1964).

2. NDN Infrastructure

During the one-year period over which this evaluation was conducted, the NDN functioned essentially as a "temporary" system. It was assumed that sources of long-term support for the effort might be located if the NDN approach appeared successful, but funding for diffusion activities of Facilitators and Developers could not be guaranteed beyond the expiration of ESEA, Title III, Section 306. Temporary systems, according to Miles (1964), are structures or activities that are intended for a limited duration and that bring participants together to achieve a goal in which all members share an interest. In addition to their limited duration, temporary systems are characterized by a focused range of content and clear specification of criteria for membership. Participants are usually isolated from their day-to-day pursuits and the competing demands of more permanent structures to which they belong so that they may develop new relationships with each other and focus their attention on accomplishing the task at hand. During their limited lifespan, temporary systems typically undergo an evolutionary development as objectives are redefined, roles and relationships are specified, and communication channels and power structures are created.

In the case of the NDN, participants from a relatively large number of essentially separate organizations (i.e., SEAs, IEAs, LEAs) were brought together by OE to carry out the NDN mission. Developers and Facilitators came into the NDN with some understanding of their general mission but with little sense of a unified structure in which their own position, and their relationships to other participants, were clear. The early months of the NDN have been characterized by participants as a period of uncertainty and ambiguity. By and large, Developers and Facilitators were not acquainted with each other prior to the NDN; their respective roles needed further definition, and working relationships needed to be forged.

By midway in the first year, most participants had some materials and procedures ready for use in the field. Given the uncertain lifespan of the NDN, most wanted to start identifying potential adopters without further delay. The initiative was seized by individual Facilitators and Developers.

Contacts were made, materials were circulated, and awareness conferences were organized. Many of the Developer/Facilitator contacts made during this early period formed the basis for working relationships that in turn shaped the pattern of adoptions identified in this evaluation.

As the NDN entered its second year, motivation among participants was generally high and a strong sense of accomplishment was evident. In spite of some remaining problem areas, Cohort I participants maintained feelings of camaraderie and esprit de corps. At the orientation conference for Cohort II personnel, experienced NDN participants stressed the importance of cooperation over competition. The emphasis was on sharing information with colleagues and developing an accumulation of wisdom within the organization.

The sense of group spirit declined somewhat during the second year as the issue of continuation became more urgent and the likelihood that new funding would be available at the start of FY 1977 decreased. Nevertheless, most participants maintained a marked sense of pride in their individual and collective accomplishments.

One indicator of the coherence and political viability that participants were ultimately able to attain for the NDN is the impact of activities carried out by the Dissemination Task Force. This group was created by participants in May 1975, with the goal of spreading the word about the NDN and mobilizing support for its continuation within the educational community and the Executive and Legislative branches of the federal government. Activities of the Dissemination Task Force included development and circulation of materials describing the NDN, documentation of services to LEAs and of widespread positive LEA response, and testimony before the U.S. Congress regarding NDN operations and impacts. The efforts of this group met with marked success when, in May 1976, Congress voted to provide \$7.5 million for continuation of the National Diffusion Network under Section 422 of the General Education Provisions Act.

Definitions of Roles

Attempts to define a workable unifying structure in which participants could operate continued throughout the NDN's first two years. A primary concern was clarification of the nature of the Developer/Facilitator interface and definition of their respective roles and responsibilities. The role definitions that ultimately evolved differentiate between the program expert (role of Developers) and the process specialist (function of Facilitators).

These role distinctions did not evolve without misunderstandings, conflicts, and overlapping efforts between the two groups. The division of labor that emerged, however, allows Developers and Facilitators to play roles that are complementary and only partially overlapping rather than competitive or highly redundant. This division of labor also reflects attention to both the administrator and the practitioner perspective within the LEA community. As such, the identification of Developers as program spokesmen and technical experts and of Facilitators as gatekeepers and process specialists represents a strength of the NDN approach. The most crucial point, from our perspective, is that the participants arrived at this role consensus.

Participant Alliances

The NDN can be described as person-intensive, provider-driven strategy for diffusion. By person-intensive we mean the approach relies most heavily on in-person tactics at nearly every stage of the diffusion process. By provider-driven we mean the primary sources of energy to effect and sustain adoptions are the change agents themselves. The NDN approach, then, is heavily dependent on the formation of working relationships between Developers and Facilitators. During the NDN's first two years, such relationships evolved largely on an ad hoc basis, relying on the initiative of the individual participants. These alliances had both positive and negative consequences.

Given the number of Developers and Facilitators funded and the limited time available in which to accomplish a discernible result, the

formation of alliances and coalitions was to some degree both inevitable and appropriate. The feeling was strong among participants that some tangible evidence of their impact on the educational sector was needed to demonstrate the value of their efforts and to generate continued financial support at the federal level. Hence they sought to identify colleagues with whom they could negotiate mutually acceptable understandings relatively easily and tended to concentrate their activities on those states or programs they considered likely to yield impacts quickly. The importance of such alliances was confirmed by experienced participants who counseled newcomers at the start of the second year to find colleagues with whom they could negotiate roles and relationships easily and to structure their activities accordingly.

In some cases, however, alliances led to formation of "in groups" and cliques from which some participants felt themselves excluded. A Developer or Facilitator who could not penetrate a particular subgroup had two choices: form an alternative group or function essentially independently, interacting with other NDN participants only to a minimal degree. Various participants opted for each of these alternatives.

Evidence of the impact of participant alliances is seen in the differing adoption patterns for members of the two cohorts. Cohort II Developers and Facilitators were associated with significantly fewer training activities and adoptions than were Cohort I, even when length of involvement in the NDN is considered. The vast majority of Developer/Facilitator interactions were between members of the same cohort. Very few adoptions were negotiated by Cohort II Developers in conjunction with Cohort I Facilitators and vice versa.

The reasons for this phenomenon are not entirely clear. It appears most likely that Cohort I participants preferred to maintain and strengthen relationships developed in the first year rather than to establish new ones on a trial and error basis. Under these circumstances, Cohort II participants were limited primarily to working together. This condition, if it persists, will interfere with the effectiveness of the NDN. We feel that stronger and more explicit codes of participant governance and behavior may be required.

Internal Communication and Power Structures

Given the size and the newness of the NDN, establishment of internal communication channels was a formidable task. Largely on their own initiative, participants formed a variety of task forces and informal structures intended to develop communication mechanisms and to examine issues of widespread concern during the first year. The major concerns addressed by these groups included definition of participant roles, identification of effectiveness criteria, and generation of support at the federal level for continuation of the NDN.

Most participants recognized the necessity of these exchange functions to the effectiveness and survival of the NDN's diffusion efforts (and, hence, to their own activities). Many, however, questioned the legitimacy of certain activities and the appropriateness of allowing individuals to assume, on their own initiative, the responsibility and authority associated with Network-wide functions. The emergence of what appeared to be centers of power within the membership produced considerable tension between the underlying premise of the NDN that all participants had essentially equal status and the growing suspicion that some were, in fact, treated as "more equal than others."

One response to this situation was the emergence of the NDN Steering Committee. This group, which formed late in the first year of operations, represented an effort on the part of OE to develop a participant advisory group that would coordinate internal communications and communications between the NDN and OE. By the second year the Steering Committee included Developers and Facilitators from both cohorts, each ostensibly serving a geographic constituency, and a representative of the OE program office. Many of the task forces and special interest groups that had already emerged continued their efforts, usually with some Steering Committee participation. This NDN Steering Committee held little or no actual power, but it did represent an effort to establish a permanent mechanism for addressing a variety of issues of general interest and for providing an interface between the NDN and OE. The choice of the title "Steering Committee" may have been unfortunate, since at least

some members misinterpreted their roles as policy setting rather than advisory. This seemed to create frustrations among committee members and resentment among many nonmembers who also believed that the Steering Committee had more authority. We feel that many of these problems could be avoided in the future if the committee title were made more consistent with its function (e.g., NDN Advisory Committee) and if all stakeholders had a voice in the nomination and election of committee members.

Definition of Goals, Objectives, and Effectiveness Criteria

Of major concern to NDN participants was the definition of operating objectives and, in particular, of criteria for judging the effectiveness of the approach in fulfilling its mission. The first tangible evidence of what these effectiveness criteria might be came from an internal evaluation commissioned during the 1974-75 operational period. However, the effectiveness criteria adopted in the evaluation (training activities were defined as adoptions, distance was used to evaluate the merit of adoptions, and effects at LEA levels were not included) were substantially at variance with participants' initial understanding of their goals, objectives, and effectiveness criteria. Aside from the methodological shortcomings of this evaluation and participants' misunderstanding of its purpose, it did appear to have a consolidating effect on the participants (mostly in opposition to the criteria and findings). Both Developers and Facilitators unified around the theme that appropriate evaluations of the system must take into account variations in programs (innovations) and processes. This consolidation of participants seemed to produce better awareness of mutual roles and responsibilities, as well as progress toward consensus on objectives and appropriate effectiveness criteria.

It is clear that overall objectives of the NDN need to be defined in qualitative as well as quantitative terms. Likewise, future efforts to publicize the NDN to such varied audiences as federal and state agencies, potential Developers and Facilitators, and IEA personnel should better reflect the true accomplishments of the NDN. In particular, there

is a need to avoid exaggerated claims that may generate unrealistic expectations and discriminate against complex programs that require more attention and support during the adoption process.

Overall objectives and standards need to take into account that the adoption process requires time--probably two to three years of expansion and phase-in at most sites--to mature. Also, most adopters do not view their new programs as radical departures from previous practices, but rather as improvements that enhance their own professional development and effectiveness. These findings do not minimize the impact of the NDN. They represent a recognition that change is a gradual phenomenon, an evolutionary process of "stretching, not jumping" (Schumacher, 1973, p. 169).

3. OE Management and Leadership

The period available for advance planning of the NDN was limited. In the absence of strong precedents for the NDN effort, OE planners tended to view the NDN as a field test of a new strategy using a networking approach to diffusion of educational innovations. The program office (Division of Supplementary Centers and Services) generally regarded the NDN both as an attempt to produce actual impact on practitioners and as a learning experience which would produce greater understanding of the components of a successful diffusion strategy (e.g, what types of programs could be successfully diffused; what participant characteristics and diffusion tactics produced strong adoptions; what kinds of LEAs would make use of the programs).

Another factor that influenced OE planning and management of the NDN was the uncertain duration of the effort. Federal funds to support NDN activities were originally to be available for only one year. Planners envisioned the possibility that, if the NDN approach appeared successful, other sources of federal support might become available to continue the activity beyond the expiration of Title III, or that responsibility for maintaining the NDN might be assumed by the states.

From the outset of Developer and Facilitator operations in July 1974, the Division of Supplementary Centers and Services did not heavily administer the effort, nor as indicated earlier did the government impose a tight structure or strict operating standards on participants. Although the overall goal of the effort was ambitious (i.e., "the spread of successful educational practices and products"), detailed objectives (such as expected number and pattern of adoptions) were not defined in advance; indeed, they could not realistically be anticipated. Rather than exert authoritarian leadership and control over NDN participants, OE allowed individual participants considerable latitude in carrying out their mission. OE subjected Developers and Facilitators to a minimum of external monitoring and administrative paperwork. Participants were not required to follow predetermined formats in preparing their materials and procedures or to meet arbitrarily prescribed standards for their dissemination materials, training manuals and procedures, and the like.

We feel this relaxed, essentially low profile approach by OE was very appropriate during the first year of the NDN, and probably was in large part responsible for the successful evolution of the strategy. Early comments from virtually all participants praised OE for allowing them the flexibility to work out their tactics and operating procedures with a minimum of administrative red tape. By giving the Cohort I participants both the charge to and responsibility for making the approach work, a sense of professionalism and esprit de corps was created, the effects of which became particularly evident in activities such as orienting Cohort II participants, developing effective testimony before Congress to establish funds for continuation of the program, and sustaining the system during the recent unfunded interim. Consistent with a prevalent NDN philosophy, participants were allowed pride of ownership--and consequently became heavily committed to making the strategy work. For this, OE deserves recognition and credit.

However, this low profile administration approach was not without drawbacks or negative effects. One clearly evident side effect has been the formation of invisible colleges--inner groups, the members of which

appear to others as privy to earlier, more reliable information, influence, and ultimately power. Although OE recognized this problem and supported participant-initiated activities to offset it (e.g., through creation of organizational components such as the Steering Committee, and contracting for the services of a technical assistance group to create more efficient and equitable information exchanges), still nearly all Cohort II participants sensed their second class or "outgroup" status. They came into a system which had already taken considerable shape, yet whose operating rules and procedures were neither explicit nor ratified. Furthermore, they had no formal means of further shaping the system other than through the Steering Committee, which very few participants felt did much steering. But perhaps the clearest example of the communication and organizational differences of the early NDN was the "each man for himself" approach Facilitators and Developers used to find out about each others' operations. Carried out to its logical extreme--which it nearly was--each Developer would end up responding to separate operations and interest surveys constructed by each and every Facilitator and vice versa. Other activities perceived as repetitive by many participants were the parallel cataloging operations^{*} and status assessments.^{**} These overlapping and less than successfully coordinated activities created much confusion, tension, and wasted effort--particularly among Cohort II participants--often becoming manifest at the national conferences.

^{*}Two Facilitators each prepared catalogs of the NDN. The NDN ultimately adopted the catalogs compiled by the Massachusetts Facilitator. When the technical assistant component was added, the "catalog of Developers" was updated.

^{**}Status data were collected by three agencies--Magi, a consultant firm contracted by the NDN to gather limited evaluative data; the ED project which conducted limited case studies; and the SRI evaluation, which was contracted by OPBE to study the entire operation.

OE's steps to consolidate the NDN through the creation of a national exchange (the ED component) are viewed as appropriate, although in a number of areas this exchange function needs to be strengthened. OE also needs to take steps to strengthen SEA involvement in the NDN if it is to realize greater state support (cost sharing) of the activities. Recommendations regarding organizational, administrative and technical improvements of the NDN are advanced and discussed in the final chapter of this report. Briefly, we feel management policy should be strengthened and made more explicit, and assistance should be provided NDN participants in formulating internal representation and governance procedures.

4. The Educational Diffusion Project

At the beginning of the NDN's second year, OE added to the NDN a new component intended to coordinate the flow of information and to provide centralized technical and supportive services. This addition to the NDN was, like many of its components, more a result of circumstances than of formal planning. The availability of unanticipated year-end money in June 1975 was put to use in contracting with the Far West Laboratory for Educational Research and Development, to provide centralized technical assistance to the NDN. The Lab named the assistance component the Educational Diffusion (ED) project.

Because the addition of the ED component represented a potentially significant feature of the NDN approach under investigation, the activities and impacts of the ED project were included within our evaluation scope. Our primary focus on the ED project was to document the nature, extent, conditions under which, and impacts of assistance provided to the NDN and its participants. This information in turn has been used to evaluate the need for such technical assistance in maintaining the NDN, or for recommending how it might be made more useful.

ED staff were given responsibility for continuing some Network-wide communication functions initiated by participants in the first year. Among these were production and distribution of a comprehensive catalog of JDRP-approved innovations and production of an NDN newsletter for

circulation to participants and other interested parties. ED also undertook additional activities intended to promote internal communications and to establish and maintain linkages between the NDN and other organizations or agencies. In some cases, ED undertook these activities largely on its own initiative, in others at the direction of OE, and in still others at the request of participants. Among ED's efforts to facilitate the flow of NDN-related information were production of a descriptive filmstrip, publication of adoption case studies prepared by Developer staff, and communication with other groups in the Education Division not directly involved in the NDN. ED also convened several "cluster" conferences intended to promote dialogue among NDN participants located within certain geographic regions.

A well-received effort was the compilation of a comprehensive catalog of JDRP-approved innovations which was subsequently distributed to all participants. This catalog addressed a need widely recognized by NDN participants themselves. The catalog did not replace the personal contact between Developers and Facilitators generally considered necessary to establish working relationships. However, it did alleviate the excessive burden of repeated demands on Developers for certain types of general descriptive information. On balance, this contribution was not unique. The catalog developed by ED was essentially an update of the one prepared by the Massachusetts Facilitator during the first year of operation.

The addition of the centralized assistance component did not resolve all problems associated with internal communication channels. A persistent problem was the emphasis of NDN communication channels on the flow of information from Developers to Facilitators. This one-way flow overlooked the importance of other communication patterns. Just as Facilitators needed to be acquainted with Developers and familiar with their projects, so did Developers need to know Facilitators and their operations, priorities, and requirements. However, relatively little effort was made to coordinate the flow of information from Facilitators to Developers. A catalog of Facilitator projects, describing their

operations, policies, and priorities was put together by the Massachusetts Facilitator during the first year. Although the ED project did update the catalog, apparently not all Developers received the revised materials. We feel this Facilitator material would have been useful to Developers, especially as it could inform them of substantial changes in Facilitator projects and procedures at the start of the second year.

Of limited success, also, were ED's attempts to establish a low-cost, low-effort means for sharing information, materials, and techniques within the two participant groups--an NDN Exchange. ED did attempt to assemble a comprehensive library of Developer materials, and made this materials library available to visitors at ED's San Francisco headquarters. However, this location was not convenient to most NDN participants. Also, we feel this materials exchange would have functioned more effectively if the library had been present at national, regional, or cluster conferences.

A Facilitator who developed a similar library made a microfiche version of the collection available for purchase. This set of materials, however, was only of use to participants having easy access to microfiche readers (which was seldom the case in the NDN). Also, the production of a hard copy of the microfiche library would cost more than outright purchase of the source materials.

A somewhat different exchange focus was used by the NDN's Steering Committee in their publication Forms and Formalities. This document was a collection of selected adoption agreements, monitoring and evaluation instruments, and other forms developed by individual participants for use in their diffusion efforts.

Overall, then, it appears that no single group assumed primary responsibility for coordinating the exchange of ideas and materials on a continuing basis. The channels that did emerge were often ad hoc, limited in scope, and temporary in nature. Seldom did such channels survive over an extended period. This is a serious problem in the operation and maintenance of the NDN, one which we feel needs attention and resolution.

In addition to providing centralized communication structures, ED's scope of work included technical and supportive services to participants, both on an individualized and a Network-wide basis. Participants generally assumed that ED personnel could serve as consultants to their own staff and provide expert guidance in development and publication of materials, content and format of awareness presentations and training sessions, and other aspects of their diffusion strategies. The major structures developed by ED for provision of technical support included the regional cluster meetings mentioned above and a write in/phone in service through which individual Developers and Facilitators could request specific assistance.

Interviews with NDN Developers and Facilitators suggest that recognition of the value of technical support was widespread among participants. By the time of ED's addition to the NDN, Cohort I participants had already developed materials and in-person components of their diffusion strategies, largely assisted by materials experts currently participating in the NDN.^{*} However, most continued to revise their materials and procedures during the second year based on feedback from a variety of sources. Many Facilitators and Developers suggested that a readily available source of expert assistance for NDN personnel would represent a valuable addition to the NDN, particularly for participants with limited experience in such areas as training, development and production of materials, and publicity. The ED project, it was hoped, would meet these needs.

Survey evidence indicates that the most frequent assistance that participants requested from ED entailed review of Developers' materials; 42% of the Developer respondents report seeking such aid from ED. In other areas, assistance requests were fairly low. Only about one fourth of the Developers report asking ED for advice in production of materials or publicity, and only 15% requested assistance in developing or revising

* Dorothy Soper of the New Jersey ESEA, Title III Dissemination Program provided expert materials assistance to a large number of NDN participants. However, Mrs. Soper's assistance was not available after the Fall of 1975.

training activities. By way of contrast, 30% of the Developers report seeking assistance from local sources (i.e., their "home LEA") in developing training procedures, and over 40% report requesting local aid in production and/or publicity.

Facilitators were also less likely to request assistance from ED than from other sources. About 25% report requesting that ED review their materials and/or provide assistance related to production, whereas 35% report assistance in these areas from each of three other sources--their "home LEA," SEA, or other Facilitators. Only 15% of the Facilitators report seeking ED to help in publicity matters; they were twice as likely to request aid from other Facilitators or their LEA and three times as likely to turn to their SEA.

It appears, then, that most NDN participants did seek assistance in developing diffusion materials and procedures, but that the majority relied on state and local sources or on their colleagues rather than on the NDN's identified technical assistance component (ED). One explanation is that participants found local or regional sources more accessible and better able to provide the necessary services. Perhaps, then, efforts to make the services of the centralized assistance component more accessible to participants and more directly relevant to their needs should be undertaken.

The NDN participant survey also asked Facilitators and Developers to rate the usefulness of ED services to their own operations. Survey results, summarized in Table 17, indicate the following trends:

- The ED component tended to receive favorable rather than unfavorable ratings. Developers were marginally more positive in their ratings than were Facilitators. However, the data indicate less than half of the participants (45%) felt positive about the ED component, and nearly a third of them (31%) had overall negative reactions. Although it is difficult to please all of the people, a service component should be able to earn higher marks than the survey data post.
- The pattern of opinions seems to conform to general participant expectations of what the ED component would (or could) provide. Facilitator ratings are more negative than Developer ratings on issues of internal communications, role clarifications, and general understanding of NDN

rationale and operations. This is consistent with our analysis of issues relevant to Facilitator functioning in the NDN. In comparison, Developer ratings are more negative than are Facilitator's regarding ED's provision of task-relevant information and services. This again is consistent with our analysis of Developer task orientation. It should be noted, however, that this issue of task assistance produced the most positive overall rating of the ED component.

Table 17

NDN PARTICIPANT OPINIONS OF ED SERVICES AND ASSISTANCE

Assistance Category	Participant Ratings					
	Facilitator			Developer		
	Positive	Neutral	Negative	Positive	Neutral	Negative
Helped to improve your group's com- munication with other NDN parti- cipants	45%	19%	35%	47%	25%	28%
Helped to clarify roles of NDN participants	36%	24%	40%	37%	20%	33%
Provided your group with information that enabled you to do your job as a Developer (Facilitator) better	62%	18%	20%	52%	18%	30%
Gave you a more precise understanding of the overall NDN rationale and operation	38%	21%	41%	48%	28%	24%
Overall	45%	21%	34%	46%	23%	29%

Source: Spring 1976 Survey

We interpret this finding as follows: The ED component (or a similar assistance component) is viewed as desirable and helpful by both categories of participants, primarily at the operational (task specific) level, and to a lesser degree at the general conceptual level. Responses to the assistance provided reflect the expectations and concerns of the separate categories of NDN change agents. The data show there is substantial room for improvement--either in providing more need-specific assistance, or in lowering participant expectations for these services. We recommend the former.

Miles (1964) suggests that temporary systems, once established, find it difficult to assimilate new components unless the members perceive strong advantages to such additions. The contribution of the new group must clearly outweigh the time and effort needed to familiarize the group with existing structures and norms. Thus, ED's late entry into the NDN may account in part for the relatively low utilization by participants of the centralized services.

A second problem appears to be associated with the nature of the ED scope of work. It was expected that a large portion of ED's efforts would be devoted to providing direct technical support to participants. However, participants found that some requests could not be accommodated--that ED staff were available to review draft materials but not to provide the in-depth, personalized consultation participants expected. Provision was also made in the ED scope of work for services to OE that were not directly related to the NDN. In the course of the contract period, ED's emphasis generally shifted away from facilitation of internal communications and direct assistance to participants; increasing attention was given to establishment of external linkages and assistance to other OE program offices in the development of diffusion strategies.

We recommend that OE continue to make centralized services available to the NDN to address the need for: (1) efficient communication channels to which participants will have ready access on a continuing basis; and (2) technical support for participants in development and refinement of materials and procedures. However, we also recommend that

participants help to define the scope of work for the technical assistance contractor to assure that its efforts will reflect the major concerns of NDN participants. A separate contract could be issued for assistance to OE in development of federal strategies and priorities. These recommendations are discussed further in Chapter 6.

5. Summary

In this chapter we have described and evaluated the organizational features of the NDN at several levels and in several contexts. These are: (1) the staffing and organization of change agents; (2) the NDN infrastructure; (3) OE management and leadership; and (4) technical assistance provided by the ED project. We have shown that staffing and organizational differences exist between Facilitators and Developers. These differences are consistent with the roles and functions of these two categories of participants and, moreover, appear critical to the adoption process over and above characteristics of innovations, adopters, and specific diffusion tactics. We noted that Facilitator organizations tended to be newly formed, whereas Developer functions most often were carried out by groups operating prior to the NDN.

We have further shown that the coordination, or networking, among Developers and Facilitators, although substantial, is far from complete, but that there is a greater tendency for linkages to occur with more experienced (Cohort I) Facilitators, regardless of Developer cohort. This outcome is consistent with the "natural" pairings observed at NDN conferences. We conclude that NDN Facilitator projects represent the new component in dissemination linker systems. By virtue of their staffing characteristics, they exhibit a practitioner orientation; yet organizationally they function as dissemination agents for their respective states. Significantly, they primarily advocate the process of adoption, remaining independent of specific innovations or Developers. Whereas Developers exhibit enthusiasm which may act to stimulate and motivate the adoption process, Facilitators exhibit administrative

sophistication which may act to guide the process and to develop necessary backup and support. They are organizationally symbiotic (synergistic).

To better understand this phenomenon, and its evaluative implications, we examined the NDN infrastructure from Miles' (1964) perspective of temporary systems. In particular, the NDN infrastructure was reviewed with respect to how a variety of separate individuals and organizations came together to achieve goals in which all participants shared an interest. We noted that in defining mutual and distinct roles, much negotiating and some misunderstanding occurred, and that further clarification of roles still may be needed. We also note that participant alliances, which are crucial to carrying out missions in temporary systems, were heavily determined by participant entry points, especially as earlier participants had more direct access to power. Accordingly, communication and power structures resembled a class system, with certain subgroups (particularly Cohort I Facilitators) viewed as more powerful--or "more equal"--than others. The lack of a strong internal representative governance structure further aggravated this problem.

OE's well-intended attempt to improve communication (both internal and external) by establishing a participant advisory group (the "Steering Committee") was only partially successful, as its origins were unclear to most NDN participants, and its purpose and functions were misinterpreted by group members. What most seemed to consolidate participants was the development and specification of goals, objectives, and effectiveness criteria. Both Facilitators and Developers, anxious to show their effectiveness, often overstated their accomplishments. Yet both agreed an appropriate evaluation of their efforts must take into account variations both in programs and processes, and that exaggerated claims of effectiveness would ultimately be to the disadvantage of the overall approach. Given that most NDN adoptions represent incremental changes in practitioner behaviors, effects at pupil levels may require two or more years to become manifest. This represents an NDN philosophy that change is a gradual phenomenon; an evolutionary process of "stretching, not jumping" (Schumacher, 1973).

The third focus of our organizational analysis of the NDN was on OE management and leadership. We characterized this management as low profile and suggested that it was appropriate to an unprecedented effort of this scope and magnitude and very compatible with the temporary system infrastructure of the NDN. Still, as the NDN grew and became more complex, the need for centralized management became more important, and several counterproductive conditions (decentralized and redundant information gathering, incomplete or miscommunications, status rivalry) emerged. Thus, although OE's low profile management style was well suited to the emergence and formation of the NDN approach, a more visible and centralized style seems needed for the future.

The final focus of evaluative inquiry described in this chapter was on the activities and impacts of the centralized technical assistance component of the NDN: the Educational Diffusion (ED) project. We noted that the addition of the ED component was intended to coordinate the flow of information and to provide centralized technical and supportive services to OE and the NDN. This component provided a variety of services, the most well received of which were catalogs of Developer and Facilitator projects and monthly newsletters. Other activities which produced mixed reactions among NDN participants were the provision of materials review and refinement services, the development of NDN publicity and public relations materials (NDN filmstrip and adoption case studies), the regional "cluster" meetings, and communications with groups in the Education Division not directly involved in the NDN. Overall, the ED component was reasonably well regarded, but did not always meet participant expectations. Some of the shortcomings were due to factors beyond ED's control. We feel that some form of continued centralized technical assistance to the NDN is called for, particularly in areas of information exchange and materials refinement.

CHAPTER 6

ANALYSIS OF KEY POLICY ISSUES AND RECOMMENDATIONS FOR NDN CONTINUATION

Background of Federal Responsibilities for Dissemination

The issue of a federal role in the support and maintenance of a dissemination approach like the NDN is superordinate to other policy issues. The Office of Education has assumed an ever-increasing role in promoting improvement-oriented change in American education. Because state education agencies are sensitive of their prerogatives in education and tend to regard federal programs more in economic than educational terms, there are mixed reactions from state and local constituents regarding the intensified interest of the federal government. Whatever the state and local perceptions, the federal legislation authorizing interventions generally requires that the Executive Branch provide for dissemination of benefits, and there is Congressional pressure for sustained improvement in programs.

At present, the Education Division of HEW does not appear to have a well-articulated dissemination policy, although steps in the direction of formulating policy are under way (e.g., the DAG report, 1976). In the absence of definitive policy statements on goals, judgments about the efficacy of the NDN will vary. For example, as a strategy to promote widespread awareness of promising innovations, the NDN would have to be considered overly elaborate and too expensive. But as a strategy for promoting widespread adoption and utilization of these innovations, the NDN shows great promise and considerable efficacy.

Key Policy Issues

Anticipating the formulation of a federal dissemination policy that endorses active promotion of validated innovations, including support for

technical assistance in the adoption-implementation process, the NDN can be considered efficacious and the Education Division has several key issues regarding the future use and support of an NDN-type strategy that need to be addressed. Among these are:

- What should be the federal responsibility for supporting and maintaining NDN-type activities?
- What should be the state and local levels of participation and support?
- What incentives exist or can be developed to encourage greater state and local involvement and support?
- What range of current OE programs should be accommodated by NDN-type activities?
- What policies should govern the inclusion, level of support, and duration of support of candidate innovations?
- What policies should govern the funding of Facilitator components?
- What technical, organizational and administrative assistance should be conducted or coordinated at the federal level?
- How should NDN-type activities be coordinated with other Education-Division dissemination programs (e.g., NIE)?
- What procedures and criteria should be developed and employed to monitor and assess the functioning and effectiveness of NDN-type activities?

Our analyses of these issues and our recommendations regarding them follow from our study of the processes and outcomes of the NDN as well as from other recent studies of education change pertinent to federal dissemination policy.

Continued Federal Support of the NDN

First, assuming that USOE wishes the network they launched to survive, there is a need for continued federal participation in and direct support of the NDN, at least for the near future. Second, the availability of JDRP as a quality control mechanism is very important for the effective operation of the NDN. As was shown earlier in this report, the NDN stemmed from a provision in ESEA Title III (1973 Amendments, Section 306). However, it is very unlikely the NDN would have fared well had the

JDRP (then the DRP) not been available. In particular, the existence and the decisions of JDRP served as tangible federal dissemination policy. In the eyes of Facilitators and Developers, the JDRP functioned as a clearinghouse, a legitimizing agency, an indicator of federal educational priorities, a quality control mechanism, and a target criterion for innovators. The full impact of the JDRP on the formulation and ultimate effectiveness of the NDN is not known, but it is believed to be a necessary element for the approach. It is the apex or keystone of the strategy; the "Good Housekeeping Seal" or the "Underwriter's Laboratory" approval. The utilization and ultimate effectiveness of the JDRP, however, will also be strongly influenced by continued federal participation and support of NDN.

As OE supported Developers in the network, JDRP approvals became more meaningful in terms of who might be eligible for support. If the federal government withdraws support of a network to disseminate the products declared exemplary by JDRP, then not only will the incentive for becoming approved be decreased, but also it is doubtful that the JDRP will serve as the exclusive quality control mechanism. The federal JDRP will lose much of its influence over what is disseminated among educators.

At present, states understandably prefer their own Identification and Validation (IVD) procedures for selecting innovations for diffusion. Many state IVD procedures equal the stringency of JDRP, and have added relevance of organizational proximity and locally developed programs. But they clearly lack national visibility, and to suggest that states pool IVD procedures to obtain such national visibility would be to invite conflict and chaos.

From the adopter's perspective, the credibility of NDN innovations was in a large part due to their national-level validation (i.e., JDRP). In other words, the JDRP serves to enhance the credibility of innovations both by "legitimizing" them and by attesting to their merits. But to maintain the continued influence of this centralized quality control component (the JDRP), some continued federal sponsorship of the NDN will be necessary. What is needed is a means for involving greater participation and support by the states in this national review and validation component. For

example, to provide for SEA-level input into the JDRP review process would probably strengthen the relevance of the review criteria and increase the likelihood of viable state-federal partnerships. There are, of course, formidable problems in organizing and obtaining such SEA input. These problems are discussed and recommendations are advanced below under the topic "State Participation and Support."

A second key element of the NDN was the creation of the State Facilitator linker agents. This general innovation sets the NDN strategy apart from earlier federal change strategies and accounts in a large measure for its apparent success. The creation of State Facilitator positions and functions brought about some involvement on the part of states (many Facilitators occupied previous positions in the state Title III offices, or in state dissemination components), although in several cases the actual state education agency participation was tenuous. Accordingly, by using a high level review panel to screen and select candidate innovations and by creating a regional agent to link the innovations with potential adopters, the federal government created a mechanism for effecting directed change in education that has potential for being politically viable.

The problem is that not enough is known in sufficient detail regarding the operation or management of this system for the government to consider it a turnkey venture, ready now for takeover by the states (or some other enterprise). Indeed, the NDN embodies a substantial innovation in large-scale diffusion methodology; it has undergone considerable evolution and change within the brief period of our evaluation, and further modifications seem likely. As the system stabilizes and takes more definite organizational and operational form, and as the states increasingly take part in shaping this system, its dependency on federal support should diminish.

This analysis supports OE's decision to continue its involvement in the NDN. Federal funding is essential at least in the near future, if the NDN is to survive and if the merits and benefits of this approach are to be fully realized. Although we do not feel total maintenance is necessary, it may be appropriate to supply near-total maintenance for a brief further period (two or three years) while strategies for gaining greater state (and

local) participation and support are explored and developed. Furthermore, SEAs need ample time to be themselves convinced of the efficacy of the NDN strategy before they can be expected to invest substantial resources (staff and money) for its support. The prevalent attitude among SEAs seems to be "wait and see," which, according to some, has been conditioned by previous experiences in being expected to continue programs initiated by federal dollars.

State Participation and Support

As described above, the creation of State Facilitator change agents provides a kernel of state participation in the NDN. However, because of Title III (306) funding regulations, Facilitators were required to administer their operations through local or intermediate educational agencies, which meant that actual state participation was fairly low. This is unfortunate, since some state-level administrators (correctly) perceived Facilitators as setting up rival systems, and in these cases the NDN has earned little political credit. In places where Facilitators worked fairly closely with their state agencies, SEA participation and support appears tenable and an NDN supported partly by the states may be viable.

Even if all states were willing to provide and support Facilitator operations, this would be inadequate by itself to sustain the NDN. This assertion is based on two considerations. First, Developer projects require substantial travel and training budgets to effect local adoptions. It is unreasonable to expect states to support such activities to any great extent, particularly since--due to the "national" character of the diffusion scope--a great deal of the Developer budget is expended on out-of-state activities. If the network is to operate nationally, then the diffusion of projects must be supported at least in part on a national level. SEAs are responsible to their constituents for expenditures. It is not economically or politically feasible for states to spend their funds to "export" programs to other states. It is possible that some support for intrastate diffusion of out-of-state Developers' projects could be found. It is more likely, however, that a state would attach

higher priority to diffusion/adoption activities that did not cross state lines. Our experience has shown that states tend to favor locally (within-state) developed innovations over out-of-state alternatives, and, except under special circumstances, are unlikely to support the diffusion of out-of-state projects.

The second consideration regards the likelihood that Facilitators can use their budgets to support out-of-state travel by potential adopters to visit Developers' demonstration sites for awareness and/or training assistance. That is, a substantial part of Facilitator budgets (on the average, more than \$20,000) is spent assisting LEAs visiting Developer sites to observe the demonstration project or receive specific training. Evidence from our evaluation suggests that these visits are a useful and important part of the adoption process. However, budgetary policies frequently prohibit the use of state or local funds for out-of-state travel.

The NDN exhibits sufficient merit and promise to be considered an attractive investment for states seriously interested in improvement of education. Probably the strongest argument for state participation and support is found in the positive and enthusiastic response from LEAs who have adopted NDN projects. As more evidence accrues as to the magnitude, stability, and outcomes of these adoptions, SEA funding commitments will doubtless be influenced.

It is recommended, then, that state support of the NDN be encouraged and that the NDN be considered as a cooperative venture between the federal and state governments. The most recent USOE budget appropriations have provided resources for continuation of NDN activities for at least one more budget cycle. Although it is possible that the NDN can continue solely on the basis of these funds, a more appropriate funding policy might be to require matching grants from the states for Facilitator projects. Intrastate activities (facilitating within-state diffusion and adoptions) could be supported as appropriate by the state-provided portion of the budget, whereas interstate activities would be supported, again appropriately, by the federal portion of the budget.

Because Developers are not uniformly distributed across states, and because the majority of Developer expenses are incurred in out-of-state diffusion activities, the issue of state support of Developers is more problematic. Matching fund requirements should not penalize states in which large numbers of JDRP approved projects have emerged. Still, states should be willing to provide some support to Developers for in-state diffusion. Accordingly, at least at present, we recommend the federal government assume the majority of the burden for funding Developer projects, to the extent the Developer project meets particular priorities, and that perhaps each state put in an equal share for support of Developers.

Incentives for Increased State Participation

Several policy changes that should act as incentives for increasing state involvement and support of the NDN can be suggested. One policy would be to give states a voice in the identification of exemplary programs. Specifically, serious consideration should be given to including state representation in the JDRP. By participating in the review process, states can assist the federal government in better identifying innovations relevant to current educational needs and priorities. Such participation should foster a greater sense of commitment at the state level to active dissemination of approved projects. This enhanced commitment, in turn, is consistent with the federal goal of increased state support of the NDN.

At present, several avenues appear to be available through which to channel state input. The National Dissemination Leadership Project represents one mechanism for coordinating state representation. The National Dissemination Coordinators in the SEAs could provide state input. The Council of Chief State School Officers (CCSSO) or their state Coordinators for Evaluation and Information Systems (CEIS) also are likely candidates for providing state input to the JDRP review process. Whatever mechanism is selected for obtaining state participation in JDRP, it would have to specify representation policy (selection of representatives, number, how appointed), tenure policy (length of appointment, replacement or rotation procedures, etc.) and review policy (how input is to be used, what it should address, etc.).

A second policy change that should act as an incentive for increased state participation is to allow SEAs more involvement and responsibility for the establishment of State Facilitator agents. Through the use of relatively modest federal funds, states could be contracted to establish a linker agent to coordinate and facilitate the diffusion of exemplary projects to interested LEAs within the state. During the NDN's first two years of operation, Facilitator projects were administered through LEAs (because of Section 306 requirements), which may have limited their visibility to, and integration with, SEA dissemination activities.

Under the current NDN regulations (see Federal Register, January 5, 1977, pp. 1190-1194), eligibility to apply for Facilitator grants is no longer restricted to local education agencies. It is now possible to establish Facilitator operations within state education agencies or within other agencies that interface closely with SEA dissemination operations. As such, SEAs should be more inclined to provide some matching funds for Facilitator projects. Also, activities of Facilitator projects should become better coordinated with state-sponsored dissemination activities and interests. For example, the Facilitator project may be seen as a capacity-building component for state dissemination programs, and clearly in the state's interest. Accordingly, we view the Facilitator funding policy as stated in the current NDN regulations as appropriate and consistent with our study findings and policy analysis. Moreover, we recommend that for future funding cycles, continued preference be given to Facilitator projects which are clearly coordinated with the dissemination agencies and interest of their respective State Departments of Education.

A third policy change that should act as an incentive to increased state participation would be to expand the range of educational interests served by the NDN. Although at present there are no restrictions as to the federal education programs eligible for review by the JDRP, nor of the local programs that states may, if they choose, diffuse through the NDN strategy, still the general image of the NDN is that of a Title III Network. Many states operate their own validation and dissemination review procedures and need assurance that their approved projects are eligible for inclusion in an NDN strategy. This is not to suggest a preference, but simply to widen project eligibility, which should increase the relevance of the diffusion strategy.

Developer Funding Policy

The government should take steps to emphasize the nonexclusive nature of the JDRP. There is a general concern that the NDN serves only Title III programs, which stems primarily from the preponderance of Title III innovations in the funded pool of Developer projects. This apparent bias was due in part to the large number of approved Title III projects in the JDRP pool when the NDN first began (1974) and the fact that the NDN originated within the Division of Supplementary Centers and Services (Title III). The program officers had fairly direct access to Title III state coordinators, who in turn assisted in identifying potential Facilitator and Developer grant applicants. Consequently, the clear majority of Cohort I projects--both Facilitator and Developer--were associated with Title III. During the second year of operations, a clear effort was made to expand the range of funded projects, particularly Title I and Right-to-Read.

This parochial stigma within the Education Division, then, has some basis in fact and may be difficult to overcome in the near future, if at all.* More recently, the NDN has been referred to as the "BESE Network," indicating those outside of BESE (e.g., Vocational Education, NIE, Handicapped) may not have been included in the planning and do not yet see the strategic value of the approach. To some extent, this is a bureaucratic inevitability, but there are several policy options that could substantially reduce this bureaucratic opposition and further enhance state participation. One such option is to permit the participating states (those establishing Facilitator operations) a voice in the selection of Developer projects for funding. Another option is to assure the collection of funded projects is representative, as nearly practicable, of the range of approved projects. Given the increased range of program area and content represented in the recent collection of JDRP projects, and in the NDN Developer funding

* It should be noted that although this parochialism may have strong consequences at the federal level, it is generally unrecognized at lower (state and local) levels. Rather, the dominant assumptions in the field are that government programs and agencies are highly coordinated and that consequent operations are organized and intentional. Hence, competitive and redundant federal program activities are often viewed at the state and local levels as purposive--albeit wasteful.

regulations for the current funding cycle, there is evidence that OE is, in fact, exercising this second option.

The first option--allowing states a voice in Developer funding--seems to offer the greatest incentive for state participation, but may be the more difficult to put into operation. Tactics might range from polling SEA interests through some balloting procedure to possibly even allowing states to "purchase" projects through some radically discounted matching funds algorithm (e.g., allocating ten federal dollars for each state dollar committed to particular types of innovations). The advantages of this incentive device are that it helps define state priorities and interests, increases the relevance of programs provided, assures a fairly high level of commitment and participation by the states, and leads in the direction of general assumption of the system by the states. As such, we recommend that provision be made for state (or representative) input in setting priorities for types (i.e., early education, basic skills, environmental, handicapped) of JDRP approved innovations or exemplary projects to be funded for diffusion in the NDN.

The second policy option--funding a representative range of projects--assures that the collection of projects being supported for national diffusion will be maximally relevant to the largest educational constituency, given the pool of approved products and practices. For reasons to be discussed below, it is unrealistic to assume all approved innovations will or should be funded, or that a given innovation should be funded indefinitely. Hence, this option assures that for a given funding cycle, effort is made to include support for the full range of innovations, in reasonable proportion to their availability and demand. Accordingly, we support OE's effort to ensure that the selection of JDRP-approved projects funded for future diffusion through the NDN represents, as nearly as practicable, the range of approved projects.

Central to our discussion of issues involved in innovation funding policy is an assumption that Developers as a class of change agents are more dependent on federal support in the NDN than are Facilitators. This

assumption is supported by our evaluation findings which demonstrate that states not receiving federal Facilitator grants still tend to participate in the NDN and, in at least one instance, report considerable (albeit below average) adoption activities. Nonfunded Developers, on the other hand, rarely show any appreciable national diffusion relative to that observed for funded Developers. Developers, then, do appear far more dependent than Facilitators on national funding support, at least as demonstrated by our evaluation.

Assuming Developer support will be made available at the federal level, the questions to be addressed are:

- (1) For how long a period should Developer support be provided?
- (2) At what level should this support be provided?
- (3) How many innovations (Developer projects) should be supported at a given time?

Duration of Support

Several considerations suggest that Developer dependence on external or national level funding should be temporary and is most critical only in the first few years of diffusion efforts. In the first place, the majority of Developers require at least one, and probably two years to establish and refine their dissemination tactics and materials. As described in Chapter 3, there is evidence that Developers do modify and improve both materials and tactics based on experience with adopters. Some of the improved tactics become part of the conventional wisdom of the NDN, but a large portion is individualistic--the Developers learn what works best for them. Accordingly, a major benefit of external (federal) support is in enabling the Developer to "get up to speed."

Secondly, a particular innovation should not be expected to appeal to all educational stakeholders. The main rationale of the NDN should be to provide Developers an optimal opportunity to promote their innovations nationwide, but not necessarily to expect adoptions from everyone. Furthermore, most Developers concentrate on "early adopters," those LEAs most predisposed to successfully adopt and implement the innovation, and rely on secondary diffusion processes to effect subsequent spread. This

"lighthouse adoption," popular in the NDN, needs to be further studied and documented. If it appears viable and effective (line loss is not excessive), it should become the goal of all Developers.

Given several years of support, the Developer has the opportunity both to develop and refine appropriate diffusion tactics and to establish contacts and "showcase" adoptions--essentially to create a market for further activities after this federal support expires. Accordingly, we recommend that federal funding for NDN Developer/Demonstrator projects be provided for at least three consecutive years, annually renewable based on performance considerations and the availability of funds.

Level of Support

For the second policy question pertaining to innovation funding--namely, the size of the Developer contract or grant--we see no compelling reason for altering current policy. Our interviews with Developer staff revealed that although virtually all would have liked more money, few felt their current level of support had seriously impeded their diffusion activities, nor did many indicate that large budget increases would produce proportionate increases in their effectiveness. Although there are exceptions, most Developer projects consist of relatively small, closely knit staffs. Virtually all of the Developer projects studied in depth in this evaluation were operating at close to peak capacity and efficiency. In our opinion, substantially larger budgets (implying larger and more complex project operations) might actually decrease their effectiveness.

The most recent budget appropriation for continuation of federal support of the NDN is approximately \$7.5 million. This is nearly equivalent to (slightly below) the previous support level, which funded 66 Developer projects and Facilitator operations in 36 states. The size of Developer grants varied enormously--from \$20,000 to \$400,000, but averaged about \$75,000 per year. Similarly, Facilitator grants fluctuated in terms both of the size of the state (population and area) and the organization of the Facilitator project (state-wide or multiple regions within states);

the average Facilitator grant was about \$100,000. Our survey data indicate that with this funding and level of effort, the NDN generated roughly 1,000 adoptions per year. Visits to 34 adopting sites near the close of their first year of implementation suggest that most reported adoptions (about 80%) appear moderately to well implemented but will require more time and follow up assistance from participants in the NDN before they are likely to be well assimilated within the adopting units.

Moreover, our evaluation has shown that Developer budget expenditures change markedly over the first two years of diffusion activity. During the first year, much time, effort, and expense is concentrated on developing and refining training and project dissemination materials. Also, some allowance must be made for "learning the ropes," establishing connections, and working out procedures. During their second year, Developers seem to be much better at husbanding their resources, scheduling, and screening; overall, they benefit from the start-up experiences, but each in his/her own way. Still, these two different activity emphases seem to require the same general level of overall support. As such, we recommend a fairly constant level of support be provided to funded projects during the first two years.

During the third year of support, the Developer project could be weaned from reliance on federal dollars. Perhaps half, or at most two-thirds, of the first-year budget should be made available in the third year. Developers should plan to secure support for fourth-year activities from sources other than the government. Thus, the recommended federal support policy for Developer projects is, over a three-year period, to provide a constant, fairly high level of support for the first two years, with substantially reduced support for the third year.

Number of Projects

The remaining issue--the number of Developer projects to fund for a given activity year--is both more complex and more arbitrary. Again, we see no compelling reason for a change in the number of projects supported for diffusion. On the other hand, given sufficiently well-rooted and

organized Facilitator operations, it may be possible to substantially increase the number of supported projects at reasonably constant effectiveness. However, one lesson should be emphasized from our evaluation findings: Attempts to increase volume are at the expense of quality.

Related to this issue is the question of replacements. We assume that additional innovations will emerge and be validated at a reasonably constant rate (or at least the potential for identifying more projects exists). For this discussion, we propose that 25 replacement projects per year is reasonable and consistent with the rate at which additional innovations are being approved by JDRP.

Given the recommended three years of Developer support, and the current collection of one- and two-year experienced Developers, and a replacement policy of 25 projects per year, a stable and attractive support policy involving 75 funded Developers can be accommodated. Specifically, during any given year, 75 Developers projects would be supported: 25 each in their first, second, and third year of federal funding. Over any three-year interval, the set of funded projects would be completely replaced, yet in an orderly phase-in/phase-out schedule to attain maximum benefit. Moreover, this funding policy greatly reduces the jeopardy to NDN continuation if support is terminated at any point.

The cost of adopting this innovation funding policy, in the numbers, levels, and sequences described, could be accommodated within the current level of NDN support. Considering the investment in developing the innovations, and the fact that about 1,000 adoptions annually will likely result,* the cost (\$5 million) is actually relatively small. Most importantly, this cost is within the range of serious consideration for assumption by states. (If all 50 states participated, the average cost would be \$100,000 per state per year.) Also, as described earlier, states can be encouraged to gradually assume an increasing proportion of Developer support, particularly as the advantages of the NDN become manifest in LEAs that have adopted NDN programs. Accordingly, we recommend that the

* This is based on the average of 13 "high-quality" adoptions per Developer per year.

government give serious consideration to adopting the above described innovation funding policy (or some reasonable variant), based on the availability of funds.

Facilitator Funding Policy

The goals of supporting Facilitator operations should be in the direction of creating general capacity for states to operate and maintain Facilitator components and to participate in the NDN. This becomes a complex issue because many technical services agencies and firms reside outside of SEAs and doubtless will qualify in some respects as potential Facilitators. The advantages offered by such nonstate affiliated agencies (e.g., a teachers association, an R&D institute, a technical services firm) are in level of expertise, flexibility, and absence of excessive bureaucracy. There is danger, however, that these external operations may be perceived as competitive with the SEA, or simply as transient, and thus would be less likely to effect the coalitions at the state level that might result in greater state participation and support of the NDN. Most importantly, federal support of a non-SEA Facilitator agency is not likely to attract matching state funds.

Accordingly, we recommend Facilitator projects receiving SEA concurrence be given funding preference over non-SEA endorsed operations. Thus, states may elect to continue a previous Facilitator arrangement, or they may wish to establish a new component within their current dissemination department. We do not recommend that the state Facilitator project be housed within one of the currently operating program offices (e.g., Title I, Title IV-C), as this would produce disincentives for participation at a broader level. In other words, just as the image of the NDN as a Title III project created barriers to broader federal program participation, so also would the identification of Facilitators with some categorical program at the state level create such barriers. Accordingly, preference should be given to Facilitator operations that are coordinated across operating programs in SEAs.

The level of Facilitator support should be determined by project specific issues (e.g., size of state--both in area and population,

organization of Facilitator projects--central or intermediate, support levels, size of staff). Again, our evaluation does not indicate that the overall amount of Facilitator support should be radically changed. Rather, the current average of \$100,000 should probably be maintained for the immediate future. If participation by state coordinators of other federal programs (e.g., Bilingual, Title I) is imminent, provision for Facilitator staff should be considered in their funding. Still, the Facilitator project should be coordinated with the state dissemination unit (or comparable component).

Consistent with the goal of gradual SEA subsumption, states should be encouraged (if not required) to match federal support of the Facilitator projects over the near term, and eventually to assume total support of the operation. This would mean that for a Facilitator budget of \$100,000, participating states should contribute, on the average, \$50,000. This funding policy is compatible with the goals of the NDN and the Developer funding policy, and can be accommodated by the federal funds currently available for continuing this program. It also provides a definite incentive and degree of control for the states, since by increasing or decreasing their contributions, they can directly influence the amount of federal support they are to receive. Finally, this plan is consistent with state trends in dissemination capacity building and, as will be shown, may in some cases encourage consolidation across currently separate dissemination activities.

Coordination with Other Federal Education Dissemination Programs

A very substantial issue exists with regard to coordination of NDN-type operations with other federally supported education dissemination programs. As noted earlier, several major dissemination components exist across the Bureaus within the Office of Education (e.g., Vocational, Post-secondary, Handicapped, Indian, Right-to-Read), and separate systems exist even within BESE (e.g., Title I, Follow Through, Bilingual). Although the NDN can fairly readily accommodate diffusion of BESE programs, it is less realistic to propose that the NDN serve as the single dissemination system for all OE Bureau programs. These programs each have their own legislatively mandated dissemination component that will likely

continue to be administered within the respective bureaus. However, successful aspects of the NDN strategy can serve as a basis upon which these programs can model their own systems.

It is important to note there are trade-offs between the alternative strategies of managing a single composite NDN versus allowing for several parallel networks. The NDN strategy is based on the coordinated activities of organizational agents (Facilitators) with content specialists (Developers). By increasing the collection of agents, the problems of coordination are also increased, and probably at a much faster rate.

Since Facilitators must learn about and deal with the organizational infrastructure of state and local educational agencies, a case can be made for generalizing Facilitator services across bureaus. For example, an NDN Facilitator should be able to coordinate diffusion and adoption assistance equally well for handicapped, bilingual or vocational innovations as for Title III (now IV-C) innovations. The problems foreseen are in the effective limits of a single Facilitator operation (whether state or regionally organized). To be effective agents, Facilitators must be reasonably familiar both with the collection of innovations and with the style of the Developer so that a reasonable match can be effected. There are obvious limits to how much a Facilitator can handle at a given time. Our present study indicates that a large amount of time is needed for Facilitators to become effectively familiarized with as many as 50 innovations. As the list of projects becomes larger, the per-project effectiveness of Facilitators will almost certainly decline. To mechanize or automate the Facilitator (e.g., ERIC) defeats the whole purpose of the strategy.

Conversely, to create and support four or five NDNs may be useful for specific program interests, but it would entail much duplication of effort and waste. Where the characteristics of users differ sharply, as with postsecondary versus elementary and secondary, the case for parallel systems becomes stronger. But for most of the major bureaus in the current Office of Education, the JDRP/NDN seems reasonably well suited and we recommend that OE seek to establish incentives and sanctions which

will serve to coordinate parallel dissemination activities within a single diffusion system for all exemplary elementary and secondary innovations. This may require the development of guidelines and coordination procedures at organizational levels above the current operating programs. We feel the recent DAG report (1977) contains several useful suggestions for effecting this coordination. The inter-agency aspect of coordinated dissemination activities is more complicated. A recent report by the Interstate Project on Dissemination (1976) points out that Congress, in creating the NIE, assigned this agency the responsibility of research on dissemination. Among other things, the report recommends that NIE, therefore, be the dissemination agent for the Education Division. This recommendation, although logically consistent with at least one interpretation of NIE's mandate, is not organizationally consistent with OE's legislative mandate, OE's program management, nor with NIE's research mission. A more appropriate management might be to assign dissemination research and evaluation responsibilities to NIE, and to assign program administration, operation, and maintenance functions to OE. To suggest that OE develop programs to be turned over to NIE for marketing and dissemination is consistent only with a general consumer economic model that, based on our study, does not appear descriptive of school systems.

In any case, several current NIE dissemination research and evaluation programs are similar to NDN and have functions relevant to NDN activities and vice versa. Specifically, NIE's State Capacity Building Program is designed to develop state level dissemination components and appropriate linker systems to provide LEAs access to information in education. The program provides multiyear grants to states on matching funds bases to create and operate such dissemination components. At present, 24 states are participating in the program, with 10 more scheduled to begin next fiscal year. The staff and linker procedures created through this program may be very compatible with Facilitator operations. We recommend that NDN program officers coordinate with the NIE Capacity Building Program--and explore the potential for encouraging cooperative planning between the two efforts at the state level to avoid duplicating effort and creating rival systems.

A second major NIE thrust in dissemination is in the Local School Practices and Services Branch. Two programs with some relevance to NDN have recently been launched. First is the Research and Development Utilization project, in which various consortia have contracted with NIE to provide linkage between R&D products and user needs. The second program is the R&D Exchange (previously called the "feedforward" program), designed to orient R&D institutions more closely to practitioner needs and interests. Both of these programs are designed to make more effective the output of Research and Development laboratories and centers created by OE and currently supported by NIE. Also, both programs are based on a linker system concept proposed by Havelock (1971). The relevance of these programs to NDN is in the nature of products disseminated and techniques employed. While NDN innovations are not exclusive of R&D products, they do tend to be practitioner-developed. Several questions exist regarding the effectiveness of "practitioner" versus R&D-based innovations: the level of translation needed for user relevance, the nature and extent of packaging, the relevance of the products to user interests and needs, the tactics used to effect adoption, to name but a few.

Moreover, the practitioner-based innovations diffused through the NDN clearly have been perceived as attractive and relevant by LEAs. And since it is the user's perception of the innovation that is critical, perhaps R&D approaches need to add this local development component to their current system. In other words, to make laboratory-based innovations more widely acceptable to LEAs, what may be needed is a step in which practitioners implement and adapt within schools, and subsequently become the diffusion agents for the product. NIE's Local Problem Solving program seems to have made considerable progress in this direction.

Overall, then, it is vital that common and distinct features of NDN as compared with NIE programs be identified and included in future evaluations to further enhance the federal government's ability to assist in effecting improvement-oriented change.

Administration of the NDN

Our analysis of the organizational characteristics of the NDN reveals it has been operating more or less as a temporary system (Miles, 1964) over the preceding two years. In most respects this has been very appropriate, and OE is to be complimented for exercising restraint to avoid prematurely formalizing or regulating NDN operations.

Temporary systems are, by definition, intended for finite duration, and are set up to accomplish some task while at the same time being amenable to change themselves. In the case of the NDN, the mission was clear, but the organizational and strategic means for its accomplishment were far less clear. Accordingly, a temporary system structure allowed for goal redefinition, role definitions and socialization, the development of internal communication and power structures, and the emergence of normative beliefs, while focusing participant energy on the tasks to be accomplished within the finite time and resources available. As we have documented in this evaluation, this has resulted in intense, coherent activities by most of the NDN participants, producing wide-scale diffusion of many innovations. Perhaps more importantly, the system has changed the participants (they have learned to be more effective change agents), has resulted in the formation of new relationships among participants and of coalitions between many participants and state and local educational agencies, and has led to identification of useful and effective diffusion tactics (new knowledge). Finally, the Developers and Facilitators of the NDN recognized and appreciated the low profile maintained by the government. Much of the favorable comment about government noninterference during the preceding two years has been directed toward the lack of red tape so often encountered in federal program administration. The NDN participants are both grateful and able to operate more effectively when they are allowed flexibility and administrative discretion. Yet although the temporary systems approach has clear advantages for an emerging organization, it may become a liability once the organizational structure begins to crystallize.

We have recommended the NDN be continued for several years under federal sponsorship, which implies the NDN should shift from a purely

temporary system status to a more permanent structure. Participation in the NDN should still be on a temporary basis, particularly for Developers, which means the NDN will still function as a temporary system. However, the knowledge gained over the past two years should be used in formulating more definite organizational and administrative conventions and procedures.

We are not suggesting the NDN be made a permanent system in the sense of creating a bureau or office within the government, and it would be unfortunate if the NDN were to become a line program within BESE. Rather, the NDN now needs stronger, more visible central leadership and administration to reduce some of the problems and deficiencies described in Chapter 5.

The issues in the further administration and maintenance of the NDN can be summarized as follows:

- Funding--Under what federal program(s) or authorization(s) should NDN funds be made available?
- Program Administration--From which level of the Education Division should the NDN be managed?
- Governance Structure--What internal mechanism should be established for coordination of NDN activities and responsibilities?
- Technical Assistance--What kinds of assistance and what system of accountability and control should be provided to the NDN and by whom?
- Reporting and Evaluation Requirements--What reporting policies and procedures should be adopted--and what general monitoring and evaluation criteria should be applied to the NDN?

Although we do not presume to have resolved all of these issues, we offer specific recommendations regarding each, consistent with the preceding discussion and our evaluation findings.

The issues of funding and program administration are so highly related they are considered jointly. At present, NDN funds are made available through the Packaging and Dissemination item in the budget administered by a unit in the Office of the Deputy Director, BESE. The authorization was made through the "Special Projects" provision of the 1974 ESEA amendments, and resulted only after a number of NDN participants effectively mobilized to deliver evidence and testimony to the House Budget Committee

(Rep. Flood) during the FY 1977 Budget Hearings.* The current (FY 78) Education budget provides for the same level of funding, \$7.0 million, but earmarks the budget item specifically for the NDN. The question still to be resolved is the level from which the NDN should be administered.

For reasons discussed earlier, there are disadvantages in the NDN becoming a BESE line program. Instead, the NDN should be funded and administered as high within the Education Division as practicable. If OE is planning its dissemination activities jointly with NIE, then perhaps the NDN should be administered from the commissioner's office. If the ASE office is successful in articulating a workable dissemination policy that encompasses both OE and NIE efforts, perhaps the NDN should reside organizationally at that level (or at a level specified by the dissemination policy), to give such policy teeth and substance. Another alternative is to administer the NDN at the Commissioner level, again with the intent of encouraging cross-program participation.

Governance issues pertain to how the NDN is structured and internally managed. This internal governance issue is addressed mainly to NDN participants (Facilitators and Developers) but will require the leadership assistance of federal government officials who are ultimately responsible for administering the program. We recommend steps be taken to formulate a strong and definitive internal organizational and governance structure developed by and for NDN participants for future internal management of the program. This organizational and governance structure should accomplish the following:

- (1) It should provide useful and detailed advice regarding separate and joint roles and responsibilities of the participants, as well as the rules by which the system operates. Leadership and governance processes (e.g., elections, committees, rules of order) should be specified at an operational level.

* This accomplishment points up both the political viability of the NDN and the flexibility of temporary systems. Without this successful testimony, effectively coordinated from within the NDN, but outside the auspices of the administration, the issue of continuation of the NDN might well be moot.

- (2) It should show how to coordinate, consolidate, and channel the two-way flow of information between participant categories, and protect each from excessive and burdensome duplications of effort or one-way reporting. This component should also provide for sharing of materials, procedures, priorities and interests among Developers and Facilitators, as well as between the two categories of participants.
- (3) It should establish a representative policy advisory body to interface with the funding agency. If OE continues to sponsor and administer the NDN, a separate NDN Advisory Committee consisting of representatives from each stakeholder group is recommended. This Advisory Committee would advise OE on NDN policy and procedure, help clarify priorities, and provide input on what technical services and assistance are needed.

If strong internal leadership and a mechanism for participant input into development of NDN policy are provided, the program should be able to function more purposively and with less wasted effort. This coordination would serve to enhance internal communication, establish more realistic operating procedures (i.e., shift from quantity to quality as an effectiveness criterion), develop better criteria and recommendations for future Developer and Facilitator qualifications and performance, coordinate the allocation of technical assistance, and realize the benefits of organization and cooperation without the rigidity of bureaucratic regulation.

Regarding technical assistance, at least two specific categories of assistance needs have been identified through our evaluation. The first is assistance to the government in coordinating and interfacing the NDN with other operating programs and with executive and legislative interests. The second is assistance to participants in coordinating, communicating, and operating more effectively. The assistance in evidence during our evaluation was primarily of the former type. Although this assistance may have been partly responsible for securing additional funds to continue the NDN, it did not serve participant information, communication and coordination needs.

We recommend that specialized technical assistance contracts be let for operating the NDN. One such contract could serve federal needs much as the ED contract did this past year. Another contract might be designed to more directly serve the needs and interests of the NDN participants.

These specialized contracts need not necessarily involve separate contractors, although they may. More importantly, we feel, ~~is~~ that input on specifics--scope, task detail, schedule, and the like--be provided by the NDN steering committee or another representative governance body. Several useful types of assistance this NDN-specialized contract could provide are:

- Coordination and administration of national and regional conferences of participants to establish connectedness and to produce mutual awareness of project specifics. In these meetings, Developers would conduct awareness briefings for Facilitators, and Facilitators would discuss operational and tactical specifics of their regions for the benefit of Developers. These meetings, then, would establish the networking (links between Facilitators and Developers) necessary for maximum diffusion.
- Establishment and maintenance of communication channels for NDN participants, and for external interface. The contractor would become the NDN communications office and clearing house both for inter-participant (horizontal) communications and for vertical (federal-state-local) communications. The contractor would also be the media agent for the NDN, producing an NDN newsletter describing participant activities, events, and information of interest.
- Production of appropriate national dissemination information. This would include updating the NDN catalog, development of scheduling and activity detail of Facilitators and of Developers, and technical assistance in project evaluation and reporting. Activity detail would be gathered periodically (perhaps quarterly or semi-annually) in convenient form and made available, as appropriate, to relevant participants. This centralized status/availability information was generally lacking in previous operational cycles of the NDN, and often resulted in redundant surveys being conducted by separate Facilitators or Developers. By centralizing and maintaining reasonably current data on participants, the technical assistance contractor would serve as a vital resource and communication link within the NDN.

The important point is that the NDN technical assistance contractor provide, at the same time, leadership, administrative assistance, centralized communication linkage, and specialized technical assistance. Under ideal conditions, the particulars of these services should be negotiated by NDN participants for NDN participants, and the government would monitor the performance of the contractor and the usefulness of services.

Project Reporting and Evaluation Requirements should be simplified and made unequivocal to all participants. One of the more complex problems in NDN communications is the ambiguity and diversity of jargon used by

participants. What one Developer refers to as training, another may refer to as demonstration. What one Facilitator refers to as an adoption, another calls an adaption or adaptation.

An unfortunate emphasis on volume developed during the first two years of the NDN, and resulted in exaggerated claims of activities and effects. This is in the interest of neither the program (NDN) nor the government's needs. We have argued, based on our evaluation, that future efforts be focused on the quality of adoptions, meaning that goals should shift from a large number of weak or partial adoptions to fewer but higher quality, better implemented, and more likely sustained adoptions.

In line with this focus, we recommend that criteria for assessing, documenting, and reporting the status and quality of adoptions be developed and supplied to all NDN participants to be used in reporting on their activities and outcomes. These requirements should include uniform information on adoption specifics, such as the adopter identity and key personnel, adoption progress or status (initiation, implementation, or assimilation stage), characteristics of the implementation (scale, fidelity, complexity, success), extent of secondary diffusion, and impact or evaluation summaries, if available. Acceptable and reasonably unambiguous definitions of these requirements seem attainable and, when employed by the participants in preparing their reports, will provide continuous information on diffusion processes. To be maximally useful, we recommend that NDN participants prepare these reports at least **semiannually**. The reporting format should be made uniform, simple, and straightforward. The coordination and interpretation of this information, including assessment of reliability and validity, could be a task for the federal-level technical assistance contractor. This continuous evidence of operational effectiveness will provide a critical basis for making program adjustments and for attracting interest and participation by states and other federal programs.

Recommended Further Studies

A large number of evaluation findings described in this report are consistent with, or have been implied at various levels by, recent studies

of educational change and dissemination.* We have attempted to point up these consistencies as we have discovered them and to consolidate these supported findings in our interpretations of NDN processes and in our formulation of policy recommendations presented in this chapter. What remain, however, are several unresolved issues requiring further investigation or clarification so that their policy relevance to NDN-type systems can be more thoroughly assessed and appropriate recommendations advanced. Among the potentially more important of these issues are:

- The roles of materials versus in-person assistance in effecting and sustaining directed change.
- Patterns of secondary diffusion and effects on the integrity of the innovations (line loss).
- Impacts of NDN adoptions in terms of conventional educational outcomes.
- Interface of NDN activities with state education agencies.
- Problems in effecting urban school adoptions.

Role of Materials

One of the most significant findings of this evaluation, we believe, regards the mutual importance of interpersonal dynamics and well-developed and organized materials to effect and sustain local adoptions of innovations. Our study has shown that although personal characteristics of innovators dominate decisions to adopt, the quality and completeness of subsequent implementations are apparently dominated by characteristics (clarity, organization, completeness) of the materials supplied to the adopters. It is essential to note, however, that these factors do not appear to operate independently: both have important influences at all stages of the adoption process. The relative importance of the two factors seems to differ at successive stages such that interpersonal characteristics are dominant during the initiation stage, and materials are dominant during implementation.

* Agarwala-Rogers, Rogers, and Wills, 1977; Berman and McLaughlin, 1975; Carlson, 1965; Rogers, 1976; Rogers, Agarwala-Rogers, and Lee, 1975; Sieber, 1976; Stearns, 1975 and 1977; Miles and Lake, 1975; Norwood, 1977.

This interpretation is obviously oversimplified, even though it is consistent with other recent findings or reports (Sieber, 1976; Stearns, 1977). We feel that the relevance of this finding pertains most directly to the kind of educational change the diffusion effort is attempting to effect. Our analysis suggests that innovations designed to change practitioner behavior may be more dependent on in-person components than will be innovations designed to change organizational and administrative characteristics of the schools. Similarly, we believe that the nature, organization, and level of detail represented in adoption materials would be expected to differ correspondingly with the kind of innovation to be implemented. For example, the recent evaluation of Project Information Packages (PIPs) has shown that PIP materials are sufficient to effect relatively complete implementations of specified project organization and structure in the absence of virtually any in-person assistance. However, those PIPs which lacked curriculum detail (four out of the six) did not fare so well in producing the intended practitioner behaviors (indeed, it is occasionally difficult to infer what the intended behaviors were), so that effectiveness data are ambiguous. Nevertheless, the PIPs did effectively "create" new projects--as intended--in the participating schools.

Most NDN innovations, which place far greater emphasis on in-person tactics in effecting implementations, rarely appear as new projects in the sense of the PIP implementations. Rather, they appear as changes in the practitioner behaviors within the existing school contexts. Whereas PIP materials focus principally on staff, resource, administrative, and organizational changes, other NDN innovation materials tend to be designed at the level of specific teacher behaviors (including daily lesson plans). Basically, then, the question should not be "what works better, materials or people?" Instead, it should focus on what may be the optimal combination of in-person assistance with organizational and curriculum materials for a given change objective. In other words, we view this in-person versus materials issue as made up of at least these classes of variables: the nature and extent of intended change; the relative balance of management versus curriculum materials; and the relative balance of materials versus in-person assistance--required to optimize diffusion success.

We recommend that studies be undertaken to better understand and evaluate these classes of variables as they exist in current diffusion and dissemination programs. A large range of major dissemination efforts are currently in operation and represent an ideal natural laboratory setting for such an investigation (e.g., NIE's RDX and RDU programs, PIP diffusion, NDN, BEH dissemination, to name a few). By carefully sampling, observing, and documenting the person-materials mixes extant across these programs, a better understanding of their relative influence on adoption and change can be developed. Such information will be necessary to guide the formulation of more appropriate resource allocation and dissemination policy.

Secondary Diffusion

The assumption that secondary diffusion processes (i.e., the spread of an adopted project to neighboring schools or districts) will operate to sustain the local spread of well-implemented adoptions has formed the basis for a number of our evaluation conclusions and policy recommendations. At this time, however, we have only the evidence of intra-adopter diffusions and of adopter reports regarding word-of-mouth advocacy to support our interpretations that the extent of secondary diffusion may be substantial. Given that it may, in fact, occur at the rate and to the extent suggested in this report (see Chapter 4), a number of critical questions still exist regarding this process. For example, to what extent do the innovations become diluted, distorted, or otherwise mutated (line loss) across successively higher-order diffusions (e.g., tertiary, quarternary)? Conversely, in what ways do the innovations become positively adapted, strengthened, or modified through successive diffusion stages? What is the rate of this higher-order diffusion, its "line loss" characteristics by types of innovations (e.g., instructional versus organizational)? Also, what sorts of interventions seem appropriate to facilitate this secondary process? For example, can the Primary Adopter become a diffusion agent for secondary adoptions? Must the originator be involved; and if so, when, how, and to what extent?

Unfortunately, little is known about these higher-order diffusion processes, even though they are most certainly involved in any wide-scale

educational (or social) change. More knowledge of these process characteristics seems particularly relevant to approaches such as the NDN, and we recommend that some studies be undertaken to document and better understand this phenomenon of secondary diffusion.

Adoption Impacts

At several points in this report, we have indicated that the present evaluation of the NDN does not include assessment of near- or long-term impacts of the adoptions, such as effects on pupil skill attainment, knowledge, attitudes, or behaviors. We have argued that suspension of such impact criteria has been appropriate, given that up to three years may be required for many innovations to be implemented from initiation to complete and stabilized assimilation within adopting schools. Still, until the educational merits of the NDN-produced adoptions can be established at the level of conventional educational outcomes, the value of this system in promoting meaningful change will be uncertain.

The current evaluation has indicated that the vast majority of adopters--in excess of 90%--plan or are implementing formal impact evaluations. Many of these reported local evaluations are extensive and sophisticated, and the majority of adopters report they are using the same measures and procedures used by Developers in establishing the effectiveness evidence used, in part, to obtain JDRP approval. This suggests an ideal opportunity to obtain impact data relevant to two interests: first, the general educational effects of the adoptions; and second, the extent to which Developer effectiveness data replicate among these adoptions and how this relates to characteristics of these adoptions. Tying a study of adoption impact evaluations to a study of secondary diffusion effects enables an evaluation to be made of the robustness of innovation consequences under conditions of higher-order diffusion.

We recommend that a follow-up evaluation of educational consequences of NDN adoptions be commissioned by OE. Such an evaluation should attempt, to the extent practicable, to make use of LEA-developed impact data. However, preliminary studies would be necessary to estimate the general reliability, validity, and utility of LEA impact evaluation

data. To the extent LEA procedures are judged deficient, some additional impact data may need to be gathered in these studies. Also, impact studies should be restricted to adopters (either primary or secondary) in at least their second year of implementation.

SEA Interface

The major perspective used to develop policy recommendations in this report has been the promotion of increased state participation and support of the NDN, eventuating a federal-state partnership in the operation and maintenance of the system. Accordingly, most recommendations presume cognizance by SEAs of the NDN and the existence or emergence of viable interfaces. Such presumptions are purely analytical conveniences since the existence and nature of such SEA interfaces were not the focus of this evaluation. In other words, our current knowledge is scant regarding attitudes or sentiments within state departments of education toward NDN-like systems.

The history of formal SEA involvement in dissemination is brief and has been characterized principally by information linkage activities (e.g., ERIC-type systems). The notable exceptions are with the Pilot State Dissemination Program (1972) and the recently launched NIE State Capacity Building Program. Because of the overall size and organizational complexity of most SEAs, knowledge of their infrastructure becomes crucial in attempting to successfully effect useful internal and external interfaces. For example, many states have separate program/administrative and planning/evaluation branches that are organizationally independent of emerging or existing dissemination units. Since much of the success in developing state participation in and support of the NDN will depend on effecting coalitions or cooperation across these state-level organizational units, detailed knowledge of their current structure and sentiments is extremely important.

We recommend that OE take immediate steps to develop relevant information on SEA infrastructures, norms, and sentiments related to dissemination activities. Relevant information should include the history of each SEA's participation or involvement in dissemination efforts,

current dissemination goals, awareness of and sentiments toward NDN, and the like. Also, information regarding SEA organizational infrastructure, key figures, formal and informal networks, budget priorities, and program details need to be developed. Without this type of information, the capability of OE to secure state participation and support of the NDN will be problematical and too dependent on luck.

Urban Schools

The evaluation findings regarding the weak diffusion trends in urban settings are both vexing and intriguing. In this report (see Chapter 4), we have described several plausible explanations for the phenomenon, but feel further investigation is warranted. For example, if the deficit is due to priorities set by NDN diffusion agents, then it is a weakness in the current program which presumably can be corrected. If, on the other hand, the low inner city diffusion pattern is due to factors indigenous to such settings, then attention needs to be focused on such factors with the intention of identifying and overcoming their causes. The third possibility suggested in the report--namely, that the actual large city diffusion/adoption patterns are underreported due to local political and organizational interests--also needs to be investigated, although if verified would not necessarily imply a need for action by OE or the NDN.

Because large urban school systems represent such a substantial proportion of the school population (in excess of 30%), and because they characteristically exhibit the more serious educational problems (or needs), relatively high priority should be placed on further investigation and evaluation of this apparent anomaly in the NDN. We recommend that the government undertake in-depth studies of a representative sample of urban school systems to determine the nature, severity, and means of overcoming the factors limiting the spread of innovations to urban schools.

APPENDIX

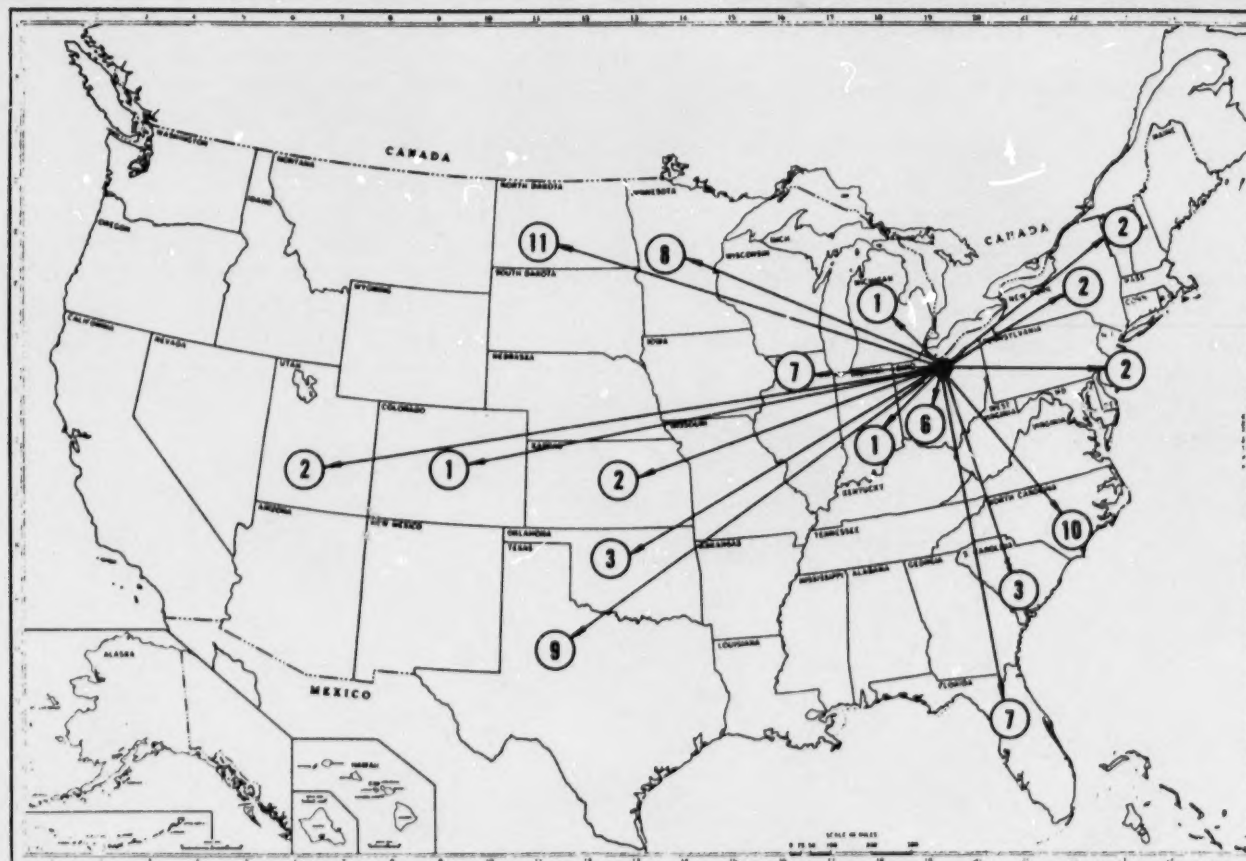


FIGURE A-1 SHOWS THE DIFFUSION PATTERN FOR NEW MODEL ME (A FUNDED COHORT I DEVELOPER.

● Represents the Developer (New Model Me)

○ Represents the Number of New Model Me Adopters by State, as Documented in the 1976 NDN Survey.

The pattern displayed in this figure is fairly typical for popular innovations (those receiving a large number of adoptions). As can be seen, most adoptions occur outside of the Developer's immediate region, indicating proximity per se is not a major influence determining NDN diffusions. The relationship of adoptions to Facilitator organizations is as follows: The ten adoptions in North Carolina were facilitated by four of the five North Carolina Facilitators, the nine adoptions in Texas by five of the fifteen Texas Facilitators, and eight adoptions in Minnesota by one of the three Minnesota Facilitators. The remaining New Model Me adopters shown in this figure are in single Facilitator states.

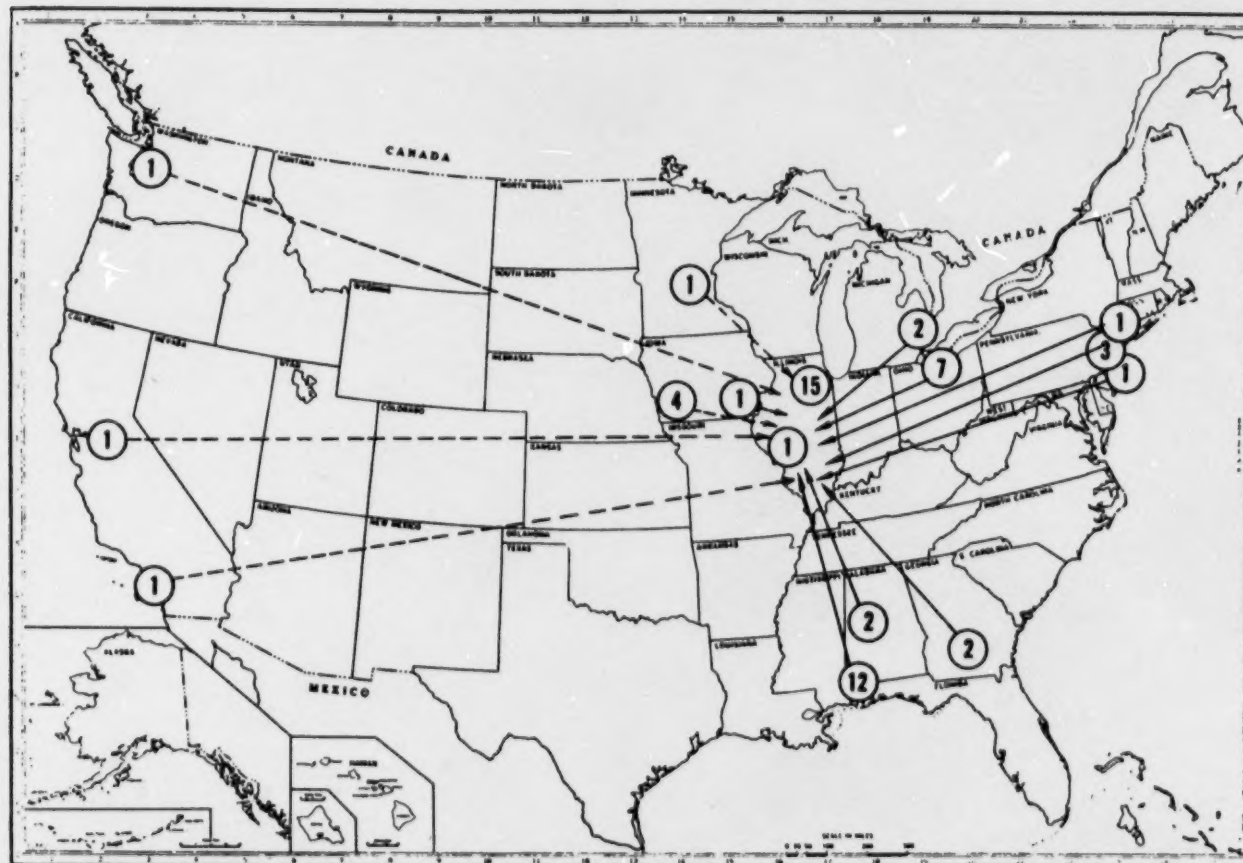


FIGURE A-2 DISPLAYS THE NDN ADOPTION PATTERNS WITHIN A SELECTED FACILITATOR REGION (THE STATE OF ILLINOIS).

Circles connected by solid lines indicate Cohort I Developer projects, circles connected by broken lines represent Cohort II Developers. Entries within circles indicate the number of adoptions occurring for the particular Developer. Data are compiled from the 1976 Evaluation Survey.

This pattern, which is fairly representative, reveals the following trends:

- (a) Overall, more inter-state than intra-state adoptions occur even though the most popular Developer is within state.
- (b) Proximity does not appear to be a dominant factor; a total of 24 adoptions occur for developers considered remote to this state, whereas 15 occur for Developers in neighboring states.
- (c) Distinct patterns of diffusion (Westward for Cohort I projects, Eastward for Cohort II) reflect a confounded effect of diffusion trends and funding chronology. That is, most Cohort II Developers were in the western half of the U.S., and tended to diffuse Eastward.

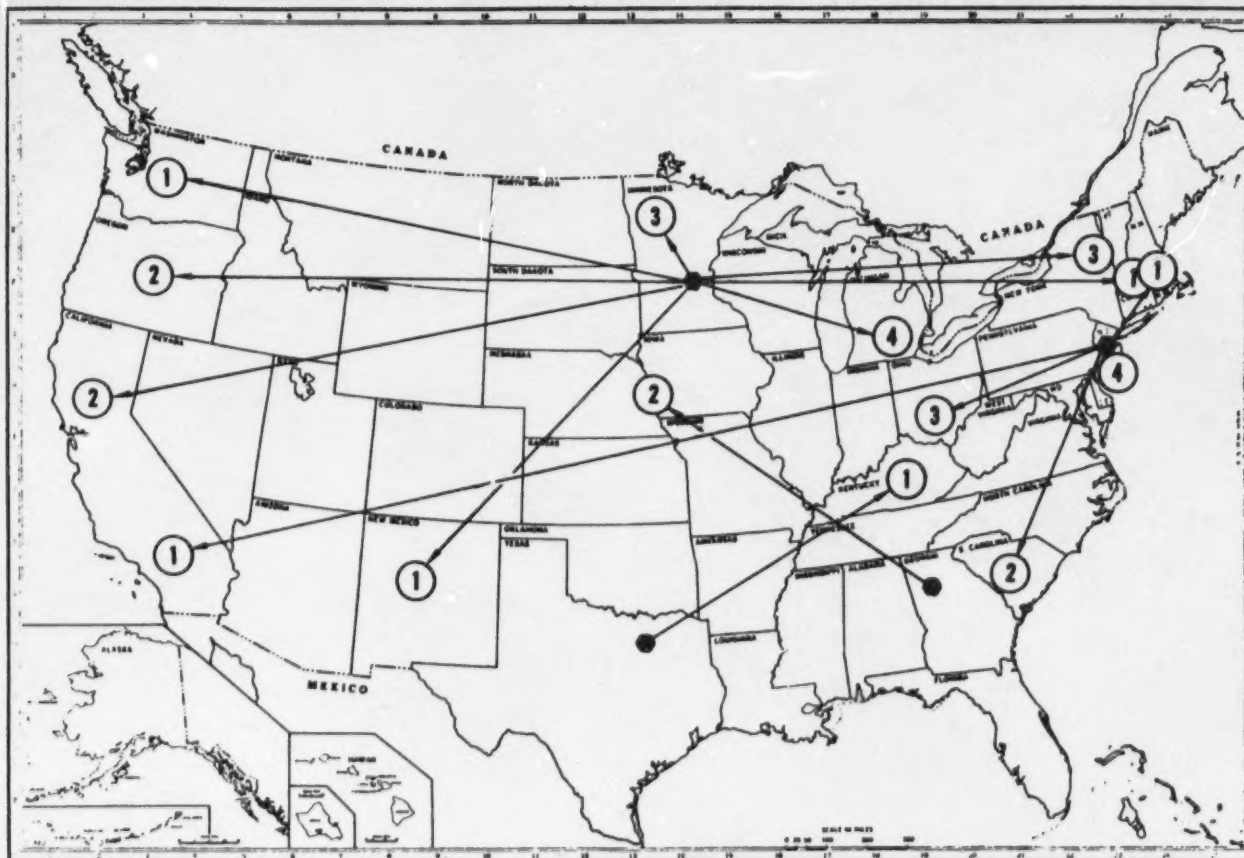


FIGURE A-3 SHOWS THE DIFFUSION PATTERN OF COHORT I DEVELOPERS WHOSE PROJECTS STRESSED ORGANIZATIONAL ARRANGEMENTS/TRAINING/ADMINISTRATION WITH COHORT I FACILITATORS.

- Represents the Five Developers (i.e., Simu School, Project Success Environment, St. Paul Open School, and Learning Experience Module) in this Cluster.
- Represents the Number of LEAs in a State That Adopted One or More of These Five Developer Programs (As Documented in our 1976 Survey).

The diffusion pattern of this category is fairly characteristic of most major program categories, e.g., Early Childhood/Parent Readiness, Reading/Language/Math, Special Education/Learning Disabilities, except that this last category (Special Education/Learning Disabilities) also showed more state specification diffusion patterns (apparently reflecting differential state priorities in this program category, and an apparent bias toward specific SE/LD innovations).

REFERENCES

REFERENCES

- Agarwala-Rogers, R., Rogers, E.M., & Wills, R.M. Diffusion of IMPACT innovations 1973-1976: Interpersonal communication networks among university professors. (Research Report). Stanford, Ca.: Applied Communication Research, 1977.
- Berman, P., & McLaughlin, M. W. Federal programs supporting educational change. Volume IV: The findings in review (Report No. R1589/4-HEW). Santa Monica, Ca.: Rand, 1975.
- Carlson, R. O. School superintendents and the adoption of modern math: A social structure profile. In M. B. Miles (Ed.), Innovation in education. New York: Teachers College Press, 1964.
- Carlson, R. O. Adoption of educational innovations. University of Oregon, Eugene: Center for the Advanced Study of Educational Administration, 1965.
- Carlson, R. O. Summary and critique of educational diffusion research. Paper presented at the National Conference on the Diffusion of Educational Ideas, East Lansing, Michigan, March 1968.
- Charters, W. W., & Pelligrin, R.J. Barriers to the innovation process: Four case studies in differential staffing. Educational Administration Quarterly, 1973, 9, 3-14.
- Clark, D. L., & Guba, E. G. The configuration perspective: A new view of educational knowledge production and utilization. Paper presented at the annual meeting of the Council for Educational Development and Research, Inc., Washington, D.C., November 1974.
- Dissemination Analysis Group. Dissemination in relation to elementary and secondary education. Department of Health, Education, and Welfare, January 1977.
- Downs, G., & Mohr, L. Conceptual issues in the study of innovation. Administrative Science Quarterly, 1976, 21, 700-714.
- Emrick, J. A., & Peterson, S. M. Evaluation of Phase II of the San Jose Teacher Involvement Project. Menlo Park, Ca.: Stanford Research Institute, 1976.
- Emrick, J. A., & Peterson, S. M. Evaluation of the National Diffusion Network. Volume II: Technical supplement. Menlo Park, Ca.: Stanford Research Institute, 1977.

- Giaquinta, J. B. The process of organizational change in schools. In F. N. Kerlinger (Ed.), Review of research in education, 1. Itsaca, Ill.: F. E. Peacock, 1973.
- Gross, N., Giaquinta, J. B. & Berstein, M. Implementing organizational innovations: A sociological analysis of planned educational change. New York: Basic Books, 1971.
- Hall, D. C., & Alford, S. E. Evaluation of the National Diffusion Network: Evolution of the Network and overview of the research literature on diffusion of educational innovations. Menlo Park, Ca.: Stanford Research Institute, 1976.
- Havelock, R. G. Planning for innovation through dissemination and utilization of knowledge. University of Michigan at Ann Arbor: Institute for Social Research, 1969.
- Hood, P. D. How research and development on educational roles and institutional structures can facilitate communication. Journal of Research and Development in Education, 1963.
- House, E. R. The politics of educational innovation. Berkeley, Ca.: McCutchan, 1974.
- Joint Dissemination Review Panel. The Education Division's Joint Dissemination Review Panel (JDRP): Purpose, procedures & criteria. Washington, D.C.: Department of Health, Education, and Welfare, 1976.
- Kirst, M. W. What happens at the local level after state school finance reform. Paper presented at the annual meeting of the American Educational Research Association, April 1976.
- Memorandum to superintendents: Request for applications to participate in the fiscal year 1974 special projects program under the provision of Title III, section 306, Elementary and Secondary Education Acts, as amended. Department of Health, Education, and Welfare, Washington, D.C.: Office of Education, 1974.
- Miles, M. B. On temporary systems. In M. B. Miles (Ed.), Innovation in education. New York: Teachers College Press, 1964.
- Miles, M. B., & Lake, D. G. Communication networks in the designing and starting of new schools. Paper presented at symposium on Communication Networks in Education: their Operation and Influence. American Educational Research Association, Washington, D.C., March-April 1975.
- Norwood, C. R. Evaluation of the field test of Project Information Packages. Volume II: Technical report. Menlo Park, Ca.: Stanford Research Institute, 1977.

- Paisley, W. J. "Post Sputnik" trends in educational dissemination systems. Stanford University, Institute for Communication Research, 1973.
- Parker, L. A. Interactive networks for innovational champions: A mechanism for decentralized educational change. Doctoral dissertation, Harvard University, 1971.
- Pincus, J. Incentives for innovation in the public schools. Review of Educational Research, 1974, 44 (1), 113-143.
- Rand Corporation. Federal programs supporting educational change (5 vols.). Santa Monica, Ca.: author, 1975.
- Report and recommendations: Interstate Project on Dissemination. January 1976. (ED no. 125 552)
- Rogers, E. M., with Shoemaker, F. Communication of innovations: a cross cultural approach. New York: Free Press, 1971.
- Rogers, E. M., Agarwala-Rogers, R., & Lee, C. C. Diffusion of the impact of innovations to university professors. University of Michigan, Ann Arbor: Department of Journalism, 1975.
- Rogers, E. M., & Agarwala-Rogers, R. Communication in organizations. New York: Free Press, 1976.
- Ryan, B., & Gross, N. C. The diffusion of hybrid seed corn in two Iowa communities. Rural Sociology, 1943, 8, 15-24.
- Schumacher, E. F. Small is beautiful. New York: Harper & Row, 1973.
- Sieber, S. D. Trends in diffusion research: Knowledge utilization. Viewpoints, 1974, 50 (3).
- Sieber, S. D. et al. The use of educational knowledge: Evaluation of the Pilot State Dissemination Program (2 vols.). Columbia University, New York: Bureau of Applied Social Research, September 1972. (ED Nos. 065 739 and 065 740)
- Stearns, M. S. Evaluation of the field test of Project Information Packages. Volume I Viability of packaging. Menlo Park, Ca.: Stanford Research Institute, December 1975.
- Stearns, M. S. Evaluation of the field test of Project Information Packages. Volume I: Summary report. Menlo Park, Ca.: Stanford Research Institute, April 1977.
- Williams, W. Implementation analysis and assessment. Policy Analysis, 1975, 1, 531-566.